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Habermas Fightin' Waste. Problems of Alternative Dispute Resolution in the Risk Society

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Introduction

Since the early 1990s, new modes of citizen participation in environmental or technological disputes have been appearing in Germany. These cases of deliberative democracy are guided by the ethics of practical discourse developed by Jürgen Habermas. In the beginning, those alternative dispute resolution (ADR; see Freeman, 1995) procedures were charged with high expectations by administrators, politicians and social scientists. At the end of the 1990s, evaluations of their success or failure suggest a more matter-of-fact judgement of their performances. Many ADR procedures seem to have failed, but proponents from the social sciences, politics, administration and business continue to promote them as a solution for handling risk disputes. Environmental groups, however, are becoming more and more sceptical about the practice of practical discourse.

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In this paper, we will first restate the essentials of the suggested models of consensus-building by practical discourse. We will then discuss reasons for the trend towards ADR procedures and sum up existing experiences with their application. In the second part of the paper, we will develop a theoretical argument for the frequent failure of these procedures, based on a 'risk society' perspective. As we will argue, today's 'practical discourses' are not well suited, for systematic reasons, to deal adequately with the conflictual logic of the risk society.[1] In the concluding section, we will consider the argument's central implications for further dealing with environmental and risk technology issues in environmental policy and planning.

Practical discourse in environmental policies

The promise: solving risk management problems

In the summer of 1993, the renowned German weekly newspaper, *Die Zeit*, published an article

entitled 'Habermas and Waste'. The article's topic was the application of Habermas' (1981) 'Theory of Communicative Action' to the process of siting a waste landfill in the Swiss canton of Aargau. Sociologists created an organizational setting, following guidelines given by Habermas' idea of practical discourse (see Gripp, 1984; Forester, 1985; Kemp, 1985). Within this 'power-free discourse on risks', randomly selected citizens and administrators, assisted by scientific experts, managed to reach a consensus on the location of a waste disposal site. Guided by scientific expert knowledge, the agreement was reached through step-by-step discursive exclusion of possible technological or spatial alternatives. The article concludes with a somewhat ambiguous look to the future as a result of the decision made in the Aargau case: power shovels and trucks will arrive soon. Excavation will start at the chosen 'safe' location. But will it still be safe in, let's say, 20 years? Landfill insurance companies today hesitate before insuring such sites. Driven by past experience and economic calculation, they no longer believe in the promise of technological security.

This 'practical discourse', organized by the prominent German protagonist of ADR, the Stuttgart Academy for Technology Assessment, indicates a new mode of environmental conflict regulation considered both helpful and necessary, because 'when there has to be a decision on risks, for instance, coupled with genetic engineering, nuclear plants or landfills, opposing opinions and interests clash' (Willmann & Stolz, 1993, p. 25). Only practical discourse guarantees sustainable agreements. Such discursive conflict resolution procedures comprise a broad range of inter-institutional techno-political conflict management applied at various levels of political action with quite differing scopes. Besides 'traditional' technology assessment, public inquiries and ethics commissions, the new settings of dispute resolution are called 'mediation', 'risk dialogues', 'future forum', or 'citizens forum'. They are prominently featured as (the only adequate) conflict-solving measures by social and political scientists, who have thus created a new market for the application of their professional knowledge. One can mention here, for instance, the publicity enjoyed by the Stuttgart Academy for Technological Assessment or Mediator GmbH in Oldenburg. ADR procedures in the environmental field are imported from the Anglo-Saxon world, especially from the United States. Apart from proposals for concrete organizational settings, they contain main re-imported theoretical references or guidelines that draw on Habermas' vision of 'practical discourse'. Most generally, they are considered to be indicators of a tendency towards political deliberation, towards 'reflexive democracy' in the risk society (see Burns & Ueberhorst, 1988; Beck, 1993; Forester, 1993; Forester & Fischer, 1993; Renn & Webler, 1994; Hajer, 1995; Schmalz-Bruns, 1995; Rehmann-Sutter *et al.*, 1998). Some practical discourses have gained a reference status and public attention, as a result of the scientific or public prominence of their protagonists (see Holtkamp & Stach, 1995; Wiedemann & Karger, 1995; Prittwitz, 1996; Eder *et al.*, 1997; Jansen, 1997; Zilleßen, 1998). The different ADR settings can be classified into two categories, 'mediation' and 'risk dialogue', the former being organized at a concrete, local level, the latter taking place at a more general (federal) public level.

Mediation is primarily oriented towards local infrastructure decision-making (see the survey in Zilleßen, 1998). Examples thus far are the search for a new airport site in Berlin and decisions on local traffic infrastructure. Most frequently, they are applied to local waste policy issues, for instance in decisions on landfill or incinerator sites, and the development of local waste management plans. Waste issues concern about 75% of all mediations (Jeglitza & Hoyer, 1998, p. 180). The organizational setting of mediation can be resumed as follows: politicians and civil cervants decide on using practical discourse in order to guide a local infrastructure decision-making process. They call for a neutral mediator who organizes discussions with participating collective actors and randomly selected citizens. Discussion is regulated by principles of argumentative discourse based on Habermas' discourse ethics (see section entitled 'The promised practice: applying 'ethics of discourse') and supervised by the mediator who is responsible for summing up results. Practical discourse aims for consensual

agreement among all participants. In the Aargau case, the Stuttgart TA Academy used a three-stage model of cooperative discourse. First, every important interest groups' values and criteria for siting options were recorded by social scientists and integrated into an englobing 'hierarchy of values'. At a second stage, sociologists set up an indicator system in order to judge different options. At the third stage, a random selection of 104 citizens[2] discussed the given 13 siting alternatives and, following the indicator system, recommended one which was finally accepted by administrators. Along the way, they were informed by different experts, hearings and technical demonstrations of waste disposal. Other examples include a whole local waste management programme, such as in the Northern Black Forest district (see Renn, 1996, pp. 105ff).

We label as *risk dialogue* those ADR for environmental and technology issues which are not situated at a concrete local level but intended for the general German public or 'high' politics. There have been several (failed) attempts since the late 1980s to set up discussions between industry, politicians and environmental actors on chemical substances. In 1992, the first 'consensus talks' about the future of nuclear energy in Germany started at the federal level. There was no result, and current attempts to relaunch them seem to be about to fail again. But these high-level discourses refer only in a rather vague manner to the idea of practical discourse. There is no regulation of discourse and no participation of citizens. More important in this regard was the discursive 'Technology assessment of genetically modified, herbicide resistant plants' organized by the Social Science Research Center, Berlin (WZB) in the years 1991–1993. This discourse focused on two questions. Are there risk differences between transgenetic plants and traditionally-bred new plants? And how can the supposed 'special' risks of transgenetic plants be accounted for? Representatives from industry, science, government, and citizens' and environmental groups participated in the ensuing discussions. A judgement had to be made about a new existing technology and its application, but without the practical consequences of that judgement being apparent. Up to that point, the discourse had been set up as a social science laboratory experiment. According to the WZB, the main result was the proof that there are no special risks involved in the genetic engineering of plants. However, environmental groups left the arena under protest before the end (see Gill, 1993, 1996; Gleich, 1996; Schomberg, 1996; WZB-Mitteilungen, 1996).

The proliferation of practical discourses is a result of perceived losses of public confidence and procedural efficiency in established political and administrative environmental decision-making. For some time now, existing options of public inquiry in environmental issues and technological infrastructures have generated institutional management problems: 'blockages', time delays, and increasing costs in project planning and implementation. Discursive procedures appear as a means to the end of greater efficiency by reducing the complexity of civil societies' responses to institutional action. They are supposed to 'modernize democracy' (Zilleßen *et al.*, 1993) by directly attacking the democratic under-institutionalization of environmental and technological policies. ADR procedures attempt to channel citizen protests into new organized institutional forms. These correspond to the signs of fatigue and demands of a tightly institutionalized environmental movement which, after years of protest and polarization, participates in a general societal mood for a 'return to the normal' that incorporates politics and business. The new slogans embrace the philosophy 'We are all in the same boat!' or 'constructive together!'. Two further promoting factors for practical discourses can be stated: the ADR tradition in the USA has served as a role model, and with it, then, a new chance arose for the social sciences to again become not only 'more practical' but also more professional and acceptable to general society.

The promised practice: applying 'ethics of discourse'

The promise and take-off of ADR was grounded in social science and social theory, expressed by frequent references to the work of Habermas. Objectives and structures of ADR—regardless of their specific forms and different levels—can

be described as follows: they are designed to achieve competent problem identification and problem-solving in environmental and technology conflicts. In addition, 'they are to grant every potentially affected person the same chance to enter his/her values and interests into decision-making' (Renn, 1996, p. 97). There are two main characteristics: (i) a specific institutional setting is created which allows for systematic reflection on alternative societal options for development, their underlying values and their interests, and (ii) this setting allows for innovative, consensual problem-solving and collective learning. It frees politically creative potentials for action. The 'policy of roundtables' is claimed to be if not *the*, then at least *one* answer to the crucial problem in a risk society: how does society deal with 'manufactured uncertainties' (Giddens & Pierson, 1998), or Beck's problems of 'unawareness' and the 'recurrence of uncertainty into society' (see Beck, 1993, 1999; Bonß, 1993; Beck *et al.*, 1996)? Practical discourse ties governmental and non-governmental actors 'into a process of consensus-oriented decision-making. The results are voluntarily accepted by all participants for better reasons and commonly implemented' (Renn, 1996, p. 95).

According to their promoters, certain conditions must be fulfilled for ADR to be applied: a task of mid-range complexity; actor orientation toward success for all (win–win situation); a minimal consensus on procedures; low conflicts on values and norms (no 'yes–no decisions'); a neutral mediator; and well-defined problem areas (see Fietkau & Weidner, 1992, pp. 33–34; Zilleßen & Barbian, 1992, p. 17). Or, to put it in the words of another procedural suggestion, a 'co-operative discourse' (Renn, 1996, p. 103) has to meet six criteria: agreement of all participants on the procedure for reaching binding decisions, substantiation of all factual claims, acknowledgement of different patterns of interpretation and rationality, admission of all statements and the possibility of critique, readiness for fair conflict solution, and recognition of all represented interests as legitimate.

What becomes evident in these suggestions for prerequisites and organizational forms of discursive procedures is the central role of rational lines of reasoning—consensus-oriented communication is to take the place of strategically motivated assertion of interests (see Prittwitz, 1996). These procedures balance out the lack of democratic legitimacy within established decision structures with the conceptual idea of an 'ethics of practical discourse', i.e. aiming at the principles of argumentative interaction, deliberation and justification. In his works, Habermas elaborated on four validity claims immanent in the very idea of language which are realized via speech acts: comprehensibility, truth, truthfulness and appropriateness (see Gripp, 1984; Kemp, 1985). Every competent speaker engaged in communicative action implicitly draws on these four claims when discussing and arguing. These basic constituents of the 'ideal speech situation' enable the unfolding of the 'forceless force of the better argument' via communication in practical discourse, the achievement of an agreement resulting in 'an intersubjective community of mutual understanding, shared knowledge, mutual trust and joint agreement' among competent speakers (Habermas, quoted in Gripp, 1984, p. 51). 'Communicative rationality' and language-immanent emancipatory potentials unfold in communicative interaction where coordination occurs by argument, rather than by money or hierarchy. Discourse substitutes the exercise of power.

These theoretical arguments and discourse-ethical reflections together provide protagonists of ADR with a powerful argument potential. They can be used convincingly to criticize existing modes of citizen participation for their inherent powerful inequalities. This, for instance, is the case in Kemp's (1985) analysis of public inquiries in Britain, especially on distortions in the Windscale Inquiry's communication process in the late 1970s. Ethic of discourse sets up 'magic' guidelines for new settings of participatory politics of risk. The practical discourse core myth of justification and legitimacy works by the notions of 'discursivity' and 'ethics of discourse'. This myth justifies why decisions made in such settings should have societal implications—even if there is no legitimization by existing legal forms of participation.[3] Outsiders' objections are hard to present if a decision has been reached according to the idea of consensus generated by communicative action. The true

achievement of these procedures becomes the respective staging of discursiveness for participants, as well as for the broader public.

The problems of practice

However, existing practical discourses can rarely keep up with the very idea of an ethics of discourse. Quite often, strategic interests, expert advice, the exclusion of fundamentalist convictions and the lack of ties to real policy processes determine their daily routines. As a result of a number of practical failures, the original enthusiasm for ADR has meanwhile given way to a certain degree of disillusionment. Critical voices have become more pronounced, based on single-case discussion, as well as more general surveys. For example, the assessments of the WZB discourse on genetic engineering and herbicide resistant plants are highly controversial; mediation procedures fail in one out of two cases (see the discussions in Keller & Poferl, 1994; Holtkamp & Stach, 1995; Keller & Hajer, 1996; *TA-Datenbank-Nachrichten*, 1996; *Analyse & Kritik*, 1997; Eder *et al.*, 1997; *Forschungsjournal Neue Soziale Bewegungen*, 1997; Jansen, 1997; Köberle *et al.*, 1997).[4]

After all, these problems in creating an idealistic setting of practical discourse in the 'dirty' interest world of everyday reality are not really surprising. In asking about reasons for failure, we would like to distinguish between simply 'practical' reasons and a more theoretical argument from the perspective of the risk society. Let us first consider the most important statements on practical failure: (i) the argument of false application: the issue was not well suited for ADR because it was too controversial; (ii) the deficit argument: practical application was insufficient (bad mediator; bad, unwilling participants; time constraints; bad discussions); (iii) the argument of betrayal: politicians, administration or industry ignored results, although they had promised to accept them. There is broad agreement that the crucial problem of ADR lies within its (insufficient) involvement of existing administrative and political decision-making structures. The more or less noncommittal status of recommendations so far make up only for 'loose combinations' with politics and government (see Jansen, 1997). Facing the discrepancies between efforts and results, participating citizens and organized actor groups experience frustration. The conclusion is that there is no problem with discourse, but we need better mediators, better (more willing) actors, no more traitors, and legal institutional status for ADR.

Certainly, these critical arguments are justified. According to the research agenda presented in Forester (1992), there should be much more independent research on practical discourses and their application problems—research not conducted by the promoters of ADR themselves, as it is most often the case today—in order to improve their application. But we would like to present a more general argument on fundamental problems or limits of such ADR. Beyond single cases, the principle of ADR is based on a basic discrepancy built into the very heart of discursive procedures. We are referring to the importance of, or relationship towards, *(scientific) expert knowledge*. For example, the technological assessment on herbicide resistant plants organized by the WZB indicates this structural problem of discourse which is not yet considered systematically: the implicated division into scientific matter-of-fact and expert statements and differing independent value statements. In the WZB discourse, the 'scientific state of affairs' became condensed to a clear statement with a claim for superior validity: 'In the TA procedure there was . . . not an endless epistemic discourse between ecologists and molecular biologists, but an objective settlement with an unequivocal result' (Van den Daele, cited in Schomberg, 1996, p. 30). The vague scientific arguments in the reasoning of genetic engineering critics had become obvious in the discussion. There would not be specific dangers generated by genetic engineering. Therefore, as the organizers argued, there are no scientific reasons to oppose its implementation. Genetic engineering critics left the discursive setting before the 'official' end. This was attributed to their fundamentalist discourse and indignant basic attitude. The reproach about fundamentalists infers that they are incapable of dialogue and unbiased argumentation by tied values. This is surely a (contingent) strategy of exclusion.

Conceding clear priority to the validity of scientific matter-of-fact arguments in reasoned communication implicitly renews the claim of the objectivity of expert knowledge that was valid until the late 1960s. However, even early approaches toward technology assessment already questioned such claims. They indicated that politics is not to be replaced by technology, but that it is necessary to assess technological and scientific alternatives (see Gloede, 1996, p. 43). So even when a discourse leads to a factually grounded consensual decision and is considered 'successful' by organizers, participants or others, there is a possibility that problems will reappear fairly soon. In most ADR settings, there are two kinds of actors involved: those who believe in exact expert knowledge and rationality, and those who no longer believe. There is an inherent confrontation between the safety-oriented logic of 'simple modernity', based on *exact expert knowledge*, and the uncertainties of 'reflexive modernity' (Beck, 1986, 1989; Beck *et al.*, 1999), based on *knowledge disputes and problems of unawareness*. Knowledge is at the origin of the success and failure of ADR. This argument will be presented below.

Discourse and expert knowledge between simple and reflexive modernity

Very early on, the role of expert knowledge in ADR was already under attack (see Amy, 1987). Kemp *et al.* (1984) mention environmental actors' problems in funding their own research on nuclear energy. Wynne (1987) criticizes expert rationality as being a major obstacle in hazardous waste policies. He sees identity conflicts and struggles between experts and laymen at the core of many contemporary disputes (Wynne, 1996). Forester, drawing on arguments presented by critical theory and feminist writers Benhabib and Fraser, presents a whole research agenda around this question (see Forester, 1992, p. 273). Surely there are still more problems with expert rationality in traditional decision-making. We must not forget that ADR is featured against decision-making based on authoritarian expert objectivity, which is considered biased in various ways. But both in ADR theory and practice, there is a strong tendency to restore the objectivity and certainty of expert knowledge claims. Practical discourse may indeed renew this belief. But as it happens, its failure is often a result of the confrontation between different ways of framing knowledge and risk. This *clash of frames* is central to the conflictual dynamics of risk society.

Entering risk society: when risk cultures clash

In his book *Risk Society*, German sociologist Beck introduced the distinction between 'simple' and 'reflexive' modernity (see Beck, 1986).[5] Beck argues that through rising levels of education and wealth, processes of cultural individualization and technological risk production, the industrial society (simple modernity) and its core conflict of capital versus labour have been replaced by the risk society (reflexive modernity). The central conflictual scheme of risk society is the perception, distribution and effect of technologically generated risks (nuclear power, genetic engineering, chemical industry, environmental contamination). These are seen as problems resulting from 'organized irresponsibilities' (Beck, 1988) within the dynamics of economic growth and scientific-technological progress. Environmental and health risks are not directly perceptible; their perception depends on mediation by scientific expert knowledge; they are neither excludable nor bound in time and space. Moreover, established rules of accountability (causality, guilt) and of precaution in case of damages (insurance) fail.

The industrial society thus generates dangers which undermine precisely its own basic assumptions: promises for comprehensive security and promises of scientific-technological progress and control. This process sets free powerful potentials of 'manufactured uncertainty' (Giddens & Pierson, 1998) and questions modern hopes and trusts in scientific knowledge and technological control. The new manmade dangers produce a generalized self-experience of society as self-threatening, as facing problems of

a new kind that cannot be dealt with by existing institutional settings. There is no end to their capacity for generating definition and knowledge conflicts. Reflexivity as a process of structural self-confrontation or feedback, then, may find collective actors support, may enter the public sphere and, thereby, turn into the cognitive mode of reflection. The structural production of risks sets free conflicts over the distribution of 'bads' and opens up opportunity structures for the '(re-)invention of politics' (see Beck, 1999, 1993; Beck *et al.*, 1996).

While risks in scientific and technological terms deal with mathematical and statistical calculations of occurrence probabilities, the risk notion in the social sciences considers risks to be dependent upon decisions and framing. Sociology then points to far-reaching differences in risk perception and acceptance *between and amongst* experts and laypersons. Nowadays, there are different, opposing, competing cultures of risk amongst experts and citizens as well. The distinction between the industrial society and the risk society introduced previously corresponds to two logic systems of framing and managing risks: 'Risk society begins where societal systems of norms promising security fail in the face of risks caused by decisions' (Beck, 1993, p. 40). The instrumental risk frame in simple modernity calculates probabilities of occurrence and residual risks. It reframes social and technological risks in terms of security, technological mastery, compensation and securability, order and control. Consequently, risks vanish from public discourse and become normal. This is not self-evident—in the 18th and 19th centuries, we see long-standing debates on 'dealing with uncertainty', for instance during the development of social and working place insurance systems. Insurance proved to be the adequate transformation mode of those early modern risks into experienced security (see Evers & Nowotny, 1987; Ewald, 1993).

The logic of risks in reflexive modernity has lead to a broad discussion on manufactured uncertainties. The mass media presentation of environmental and health damages caused by catastrophic events (accidents) of all kinds as they have occurred over the last 30 years, has created a very deep societal feeling that 'residual risks' exist *and* arrive, that causal chains are hardly detectable, and that insurance meets its needs. For instance, there has been almost a century of the promised security of waste disposals, with regularly occurring damages and responses by a higher technical standard (see Keller, 1998). Wynne addresses this question very well in his research on the Cumbrian sheep farmers and environmental radioactivity, in which he shows how expert credibility is profoundly shaken (see Wynne, 1996, pp. 62ff). Society has learned a lesson out of all this—confidence in scientific truth claims, in technological control and in expert systems is deeply and (maybe) irrevocably questioned. The Enlightenment hope for objective scientific knowledge and the scientific arbitrator works no longer. In risk society, politics re-enter the neutralized space of expertise and knowledge production. This is suggested and sustained by a lot of work done by social studies of science and technology (see, among many others, Schwarz & Thompson, 1990; Wynne, 1996; Latour, 1999).

In risk society's disputes over environmental issues, those conflicts unfold between the paradigms of 'simple' and 'reflexive' modernity. According to Bonß (1993), the difference between the two cultures can be accrued to the kind of solutions they provide for compensation, responsibility, and the calculability of non-intended impacts of action, i.e. how they deal with uncertainty and unawareness. Simple modernists follow concepts of technological mastery and security promises grounded in 'objective' probabilities and a belief in the non-occurrence of residual risks. Reflexive modernists, oriented towards uncertainty, anticipate the occurrence of residual risks as the normal case. They ask for their desirability, and for compensatory mechanisms in case of their occurrence. Risk 'optimists' act according to the paradigm of technological progress; risk 'pessimists' locate their actions in the context of probable loss of control. While security in the first case is thought to be objective, in the latter case it is perceived as context-related and socially constructed. Both logical systems stand for a way of dealing with risks, i.e. with human decisions-based uncertainties and insecurities.

The problems with facts and values

Proponents of simple modernity clearly distinguish between objective and value judgement. Moreover, they make an appeal to decisions already made according to existing legal processes. They define 'acceptable' levels of security and danger standards on technological and scientific grounds. If problems should occur, technological progress is to solve them. In that view, the importance of discursive procedures lies in coordinating given impacts with well-meant, social 'end-of-pipe' measures for consensus-building. Assuming a separation between technological development and its use, only the latter is in a limited way open for discourse. This position clearly distinguishes between experts and laypersons. Experts know what is going on, safe or dangerous. They assume that there is a political centre capable of control if the use of certain technology should turn out to be problematic.

In contrast, proponents of the paradigm of reflexive modernity or risk society view as crucial: knowledge and technology as inseparably mixed cocktails of facts and values, normality of accidents in complex systems, recognition of political and social dimensions of science, fundamental uncertainty through the systematic impossibility of anticipating important unintended impacts in R&D, and claims for reversibility of action. In addition, they request the reversal of the radical contrast between experts and laypersons, claiming the acknowledgement of several, potentially complementary forms of knowledge. Thus, discursive procedures assigned to 'end-of-pipe' decisions are insufficient because, in only discussing given technological applications, the old paradigm of science and technology as a non-negotiable and value-free 'black box' is perpetuated. Consequently, the discursive opening up of knowledge development becomes necessary.

The traditional distinction between (scientific) facts and (moral, political) values gives science a great role to play in risk conflicts, not only in setting the stage of the factual, but also in guiding decisions. In simple modernity's rationalist setting, perceptions of risks, technologies and coupled conflicts are attributed to different societal or subordinate values. They have nothing to do with technology itself. However, according to science and technology studies, we have to consider a structural interdependency of facts and values, rather than a subsequently politicized, but neutral object *per se*:

> What is considered a technical fact, and what is seen as belonging to the realm of social values, need to be treated as part of the empirical dispute over *definitional* boundaries that is integral to technological decision controversies. What is lacking in most of the literature is the acknowledgement that impact assessments, far from reflecting conflicting evaluations of the facts, involve rival *interpretative frames* in which facts and values are all bound up together (Schwarz & Thompson, 1990, pp. 22–23).

For instance, the database used for an evaluation of possible landfill sites is a result of a series of valued decisions on relevant issues: which facts are or are not considered, which probabilities are excluded, which calculations are carried out, which causal chains and possible effects are considered and which are not. Thus, the separation into objective positions and evaluations is a contestable construct *per se*.[6]

Accordingly, scientific matter-of-fact statements on 'factual' reality and resulting technologies are the outcome of various processes of careful consideration, coordination and decision-making. Numerous evaluations and value perceptions flow inseparably into the final result. Latour even goes as far as claiming that research on science and technology demonstrates that politics is an inherent component of technology. With his statement 'technology is society made durable' (Latour, 1991) he points out that the organizational achievement of technology always allows for certain social actions—but renders or makes impracticable other actions, expectations and ambitions. This is familiar in everyday experiences with technical infrastructure: underground railway stations without lifts or escalators, tram-cars with high access doors excluding potential user groups (e.g. wheel-chair drivers or—even more predominant—mothers with baby buggies) and so

on. If their inherent social injustice is questioned, much money is necessary for their reconstruction. Technological constraints are less directly experienced with technologies to which routine personal adjustment has occurred over time (e.g. the role of cars in individual mobility). Far removed from everyday life is the idea that scientific knowledge is also subject to such processes of inclusion and exclusion. Scientific objectivity and technology production can then be characterized as direct politics that take place beyond legal and legitimate political forums. Occupational action by scientists, engineers, technicians and R&D sponsors is political action. Decisions of high social impact are made although they are *not* labelled as *politics*.

Dealing with different risk frames in practical discourse

In applying the risk society argument to ADR, the following thesis can be stated: practical discourse must fail to the degree with which the conflictual logic of risk society is taken seriously. The definition conflicts and knowledge disputes inherent to risk society are characterized by the very problems of gaining objective, factual knowledge, damage insurance, lacking or over-complex causal chains and the 'normality of accidents' (Perrow, 1987). This condition eludes the logic of discourse, orienting argumentation towards 'rational' argument, scientific and technological facts, i.e. stressing control, estimating costs and security mechanisms—the modern industrial society's logic of mastery by expert knowledge. Practical discourse ignores structural interdependencies of facts and values. In re-evaluating neutral, factual expert knowledge, most of those new forms of dialogue would correspond to a transfer of known forms of inter-institutional negotiation into the environmental realm, rather than to the assumed reinvention of political institutions adequate to risk society. Those procedures may possibly generate consent or consensus, but they do not provide new solutions for the problems of 'dealing with uncertainty' (Evers & Nowotny, 1987).

Discursive procedures can be 'successful', of course. However, they are successful only in so far as they either do not refer to cleavages of risk society, or transform the risk dispute logic of reflexive modernity back into the rationalist risk-mastery logic of simple modernity by reducing causal complexities, and by reframing conflicts between different risk cultures in terms of clashing interests. This mechanism works at all levels of practical discourse application, that is, in mediation, as well as in the more general risk dialogues mentioned at the beginning of this paper. Those procedures are most successful when the issues at stake do not belong to the 'big' environmental and risk cleavages. Then there is no confrontation between different risk and knowledge cultures (as in designing downtown urban transportation or municipal infrastructure). However, attributing the qualities of 'risk' is a process of framing, not an inherent property of a phenomenon itself. Perhaps almost all issues of technological infrastructure could be framed in different systems of risk logic. ADR procedures are also 'successful' in the proper fields of risk conflict only if they succeed in restoring the lost objectivity and validity of scientific expertise, for instance by excluding fundamentalist positions, that is positions with a different cultural risk frame (as in the WZB example). If this is impossible, those procedures necessarily *must* fail because contradictory systems of risk logic will clash.

ADR is conflictual, not because some participants lack reason and rationality, but because of the competition of different cultures of risk. End-of-pipe dialoguing procedures, however, merely allow for the unfolding of the classical logic of facts, expert order and security. Current processes of negotiation can succeed when all participants subscribe to the premises of technological progress and control. This explains the success of some 'simple' ADR issues, as well as that of some more complex cases turned into simple ones. This also clarifies the remaining dispute between organizers and leaving environmental actors, such as, for instance, in the Berlin case on herbicide resistance.

How then does the transformation of risk conflicts over knowledge and unawareness into fact-based conflicts over interests work in ADR? It is a process of 'black boxing' (Schwarz & Thompson, 1990) scientific and technological

expert knowledge input. This may happen by setting initial conditions and facts not at the procedure's disposal (e.g. the decision is about landfill sites, but not about waste policy; about nuclear waste disposals, but not about energy production; about concrete technology, but not about needs and alternatives). This happens furthermore through expert advice and presentation of true, objective scientific knowledge, occurring at different levels in practical discourse. The disposition of knowledge is biased by unequal powers of knowledge production. Knowledge, technologies and facts are crystallized power.

Black boxing can easily be identified for instance in the discursive technological assessment directed by the WZB. Gleich (1996) deconstructs the scientific expertise presented there. This expert advice guided the organizers' conclusion that it was a success, and caused the environmental groups to leave. Gill (1993, 1996), participating as one of the social movement representatives, points to the given input, the technology of genetic engineering, and the combination of supposed universal human values (justice, right to live), basic human needs (hunger) and technical solutions (genetically modified food). So far, technology development takes place in a pre-politically perceived space providing freedom of scientific and technological research, supported by state and business interests. This hi-tech-based approach predetermines the basis for discussion. Basically, this could be reversed by discussing perceived societal needs which, in turn, would be the basis for developing scenarios of technological options. Only then would the political dimension of technological development become explicit. But with an immediate, unquestioned combination of technology and needs, a non-negotiable black box is set up at the start of the procedures, although the very combination itself could, or should, be understood as a result of social action and, thus, as negotiable. Technology, according to Schwarz and Thompson, is a social and political process, expressing and designing specific 'ways of life'. Its evaluation and development is characterized by different cultures of risk (Schwarz & Thompson, 1990, p. 107). A specific technological input in ADR sets up not only this technology as non-negotiable but also its specific 'way of life'.

The practice of practical discourse encourages the return to a rationality of objective facts via discourse. The explicit claim set up by ADR advocates for the provision of institutional solutions for society's confrontation with manufactured uncertainties turns out to be questionable. Repeatedly, for participating (protest) actors in such procedures, the question arises as to whether getting involved in matter-of-fact reasoning and technical solutions means to regress behind achieved levels of opening up expert rationality. It seems as if the discursive tools of *negotiating the given* might be the first, but questionable, step towards institutional reinventions in risk society. In order to work on risk problems, society—quite literally—has to dig deeper into the societal, political and cultural tool-box. What could that mean?

Perspectives

Throughout the 18th and 19th centuries, there was an on-going societal experience of new kinds of risks tied to the new industrial mode of production. Considerable public protest and political discussion are at the origin of insurance systems as a generalized institutional response to the new modes of insecurization. This made it possible to manage unintended and unwanted social consequences of industrialization without further searching for individual guilt. Could there be a similar reinvention of institutions for dealing with uncertainties in risk society? In view of former technology-induced problems, technological solutions to environmental problems carry a high burden of proof. As even Luhmann argues, nature and technology, nowadays visible as political and contingent constructs, have lost their neutral status as 'enclaves free of consensus'. This complicates chances for consensus-building by matter-of-fact arguments. Consequently, permanent communication on and constant screening of technologies become necessary (Luhmann, 1995). The envisaged *ex post* consensus in currently featured discursive procedures generates a deceptive, and perhaps soon frustrated, security as well as questionable

legitimacy. Thus, the issues become what kind of technology/nature we want to construct, and who are considered as the legitimate participants in construction processes. A sustainable society has to consider the democratic legitimacy of its *cultures of risks*.

More precisely, our argument calls for an early and procedural public engagement in knowledge production and technology development. Well aware of those processes' complexity and temporal implications, we see the following perspectives for enlarged environmental policy and planning. Strategies of knowledge and technology production have to focus on criteria such as reversibility, prevention and precaution. R&D funding could more strongly focus on systematic risk knowledge production. Institutional arrangements are able to encourage work on risk hypothesis, for instance, by promoting scientific careers and professional law, by assuring citizens responsibility at the very heart of knowledge production settings, by creating systematic contact between different disciplines and open expert controversy. The organized confrontation and collaboration of different risk cultures in producing scientific knowledge and constructing technology might avoid much end-of-pipe dispute. This initially concerns today's unfolding knowledge domains which will affect future life, for instance, some areas of biotechnology, nanotechnology, material sciences, computer sciences, energy supply systems, mobility, new chemicals in production and mass consumption.

This all calls for an explicit and institutionalized cultural attention to, and promotion of, knowledge disputes and contests. They no longer have to be considered obstacles to development and progress, but as their new, up-to-date adequate means for unfolding. Surely this implies longer public and expert attention cycles, as well as slowing down certain technological developments, but it also means enlarging considered problems and options. What is needed is an earlier and higher-level incorporation of practical discourses in the process of problem definition or identification, scientific knowledge production and technology development. In view of the risk society's necessity to enlarge citizens' participation, end-of-pipe-discourses will fail in the long run. This is no argument against today's ADR, but a clearer view of its structural limits. Instead of alternative dispute resolution, we should speak of *alternative option production* (AOP). It makes some sense to use the discursive myth, the Habermasian ethics of discourse, and the setting of practical discourse to that end.[7] Processes of generating technological and non-technological opportunity structure options themselves could be opened up by discourse. For instance, German research in technological development stresses the role of conceptual ideas (*Leitbilder*) in R&D (Dierkes *et al.*, 1992). Practical discourses could generate and proliferate such guiding ideas and metaphors, encouraging broader innovations and suggesting risk research directions. Such discourses would confront different cultural rationalities of risk, beginning with social objectives and possibilities of knowledge production and, somewhat later in procedural terms, evaluate viable technological applications. Such a claim cannot be realized tomorrow. Nevertheless, in the sense of a long-term perspective, it should now direct attention to strategically important places where today's—even marginal—decisions will shape tomorrow's technology and, thereby, tomorrow's society.

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Notes

1. An earlier version of the argument was presented in Keller and Poferl (1994).
2. Eight from each community, pre-judged to be principally suited for the landfill.
3. As Kemp *et al.* (1984) argue on the British Sizewell B Inquiry on the pressurized water reactor, this holds true for 'older' new models of investigative public inquiry too.
4. Surely, there are different criteria for a 'failure' diagnostic. We draw on political ignorance of ADR-results and of participating actors' views on the discursive processes. One could mention as 'goods beyond results' the actors and wider public

experiences in rational argumentation. Professional protagonists of mediation like the Stuttgart Academy or the Mediator GmbH set up a much more positive evaluation, based on the observation that ADR procedures often come to an end, that is a decision proposal, no matter what happens further with results, or with actors leaving by protest (see Zilleßen, 1998).
5. Beck's work is now available in English.
6. For an application on energy demand and supply scenarios, see Schwarz & Thompson (1990).
7. Propositions for 'technological citizenship' (Frankenfeld, 1992) or a new 'amodern constitution' (Latour, 1999) mixing up science politics with real politics may furnish some general ideas for further directions of deliberation.

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