

## PARTICIPATION UNDER UNCERTAINTY

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**Abstract:** This essay reviews a number of theoretical perspectives about uncertainty and participation in the present-day knowledge-based society. After discussing the on-going reconfigurations of science, technology and society, we examine how appropriate for policy studies are various theories of social complexity. Post-normal science is such an example of a complexity-motivated approach, which justifies civic participation as a policy response to an increasing uncertainty. But there are different categories and models of uncertainties implying a variety of configurations of policy processes. A particular role in all of them is played by expertise whose democratization is an often-claimed imperative nowadays. Moreover, we discuss how different participatory arrangements are shaped into instruments of policy-making and framing regulatory processes. As participation necessitates and triggers deliberation, we proceed to examine the role and the barriers of deliberativeness. Finally, we conclude by referring to some critical views about the ultimate assumptions of recent European policy frameworks and the conceptions of civic participation and politicization that they invoke.

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## Science, Technology & Society

Many have already discerned that something is changing in science *and* the world at the turn of the millennium: “business as usual in science will no longer suffice, that the world at the close of the 20<sup>th</sup> century is a fundamentally different world from the one in which the current scientific enterprise has developed” (Gallopín *et al.*, 2001, p. 219). But almost everybody acknowledges that the main changes have been occurring in science *with respect to* the world, i.e., in the relationship between science and society. In the early arrangements between science and society, there used to exist clear distinctions between the two fields such that norms and principles in each one of them were harmoniously cohabiting and co-ruling a deterministic, regular (and linear) cosmos. Of course, this coexistence did not exclude any combination between science and society; the trajectories of facts, discoveries, ideas, beliefs were possibly molded by passing through a multiplicity of different modalities but in each one of them they were capitulated into exact non-contradicting rules of reason governing both science or/and society. However, since the late 1980s (and with the end of the Cold War), the distinctions between science and society were suddenly blurred and their boundaries became no longer self-evident. Since then, we have been witnessing a “*reconfiguration*, one that in the eyes of many researchers has narrowed the confines of academic freedom, while giving free play to commodification of research and commercial stakeholder interests (market governance) and other players, including social movements and activists or NGOs” (Elzinga, 2002, p. 2). In other words, the witnessed reconfiguration is not just a mere rearrangement by a two-ways mixing or mutual permeation of science and society; it is something more since structural transformations are occurring in both science and society. In particular, science, the authority of which used to be the foundation of legitimacy of the modern state, “is now increasingly seen as an instrument of corporate profit and unaccountable power” (Ravetz, 2001, p. 7). The way Michel Callon sees it, science in the present-day society is just a ‘quasi-public good,’ because it has become to a certain degree socially, economically or politically ‘appropriable’ (Callon, 1994, p. 400).

During the last two decades, there has been an increasing number of different conceptualizations of the ways such recombination of science and society is shaped and many different names, ideas, theories and models have been coined in order to grasp the new relationship between science and society.<sup>1</sup> Nevertheless, one should remark that it is not completely clear whether always these conceptualizations are just opinions on descriptions of how things are developing or whether they also constitute normative prescriptions of how things have to develop according to the insight of the promoters of such concepts and theories. In this sense, Mark Elam and Margareta Bertilsson (2003) are cautioning that “behind every authoritative account of major changes of science and society relations stands a more or less explicit vision of how the future ‘knowledge-based society’ should be organized. The work of accounting for change is never innocent of a desire to make a difference to change” (p. 2).

Having said the last caveat, it remains to remark that – independently of the rhetoric and the inmost intentions of the coiners of all such descriptive or normative concepts or theories – some elementary but very essential premise is required to be satisfied so that these re-imaginings of science and society might be practically viable and contextually sustainable. This is the idea that a new ‘social contract’ or a ‘New Deal’ (Lubchenco, 1997; Latour, 1998; Gibbons, 1999) is needed to be established among

all involved parties in the assayed draw of science close to society. Such a new social contract is strongly needed not just as a procedural means to ratify the new arrangements but also as a necessary requirement to settle with a concomitant crisis linked to the changing character of science and society in our times. As it is stated in a recent working document of the Commission of the European Communities (2000), there is a paradox in the existing relationship between science and society. On the one side, science and technology constitute the “heart of the economy and society,” attracting an increasingly high amount of expectations towards the belief that they can bring a growing positive impact on society. On the other side, advances in science and technology have been happening in such ways as to end up greeted with equally growing skepticism or even alarming hostility. The reason is because sometimes techno-scientific expertise might either fail to cope with social expectations or tend to neglect public concerns about the outcomes of techno-scientific developments, which are vitally important for the whole society.

For this purpose, in a concrete effort to establish a new contract between science and society, the European Union (EU) has recently adopted a number of extremely urgent priorities, which aim to improve the quality of policy-making by establishing an inclusive and participatory policy framework. Thus, the Commission of the European Communities is currently setting up the processes to implement the strategic goal to make Europe the most competitive and dynamic knowledge-based economy in the world by 2010, based upon the creation of a strongly participatory and democratic European Research Area (EC, 2000, 2001b). It is believed that such a sound institution is needed in order to improve the interactions between policy-making, expertise and public debate and, thus, to produce sustainable relationships between science and society (EC, 2001a).

The attempted policy reorientation, which in particular strives to deal with the new situation in science-technology relationships, is commonly epitomized as the turn from traditional governing or political steering towards a new process of governing, usually described as ‘governance.’ Although there exist multiple definitions of this concept (cf., Kooiman, 2002; Rhodes, 1996; Boudourides, 2002), the general tendency is to understand governance as an analytical framework for collective action resulting from multiple interdependent state and public actors, private institutions, voluntary organizations etc. with blurring boundaries and responsibilities (Stoker, 1998).

Although – at least in the context of Europe – the governance perspective is usually considered to emanate from the so-called ‘democratic deficit’ and the concomitant predominance of a strong ‘input-oriented’ legitimacy of policy-making over a weak ‘output-oriented’ democratic perspective (Scharpf, 1999), there are many further theoretical investigations of the sources of the concept. According to Philippe Schmitter (2002, p. 54), governance emerges as a result of a double failure: “*state failures* and/or *market failures*.” State failures are created when something goes wrong with “calling upon the government, backed by the hierarchical authority of the *state*, to impose a solution.” Market failures arise from “relying upon firms to allocate resources by *market* competition and, thereby, generate a voluntary, mutually satisfactory outcome.” In the words of Luigi Pellizzoni (2001b, p. 11), state failures manifest the “failure of pluralism,” because of the increasing marginalization of the political institutions of parliamentary democracy from processes of competition

among civil society groups. On the other side, Pellizzoni argues, market failures are just the “failures of neo-corporatism,” because of its inability to cope with complexity, when “in a post-fordist, globalised economy, interests and concerns are too diversified to be represented and managed by a handful of monopolistic actors” (Pellizzoni, *ibid.*). In other words, what the proponents of the governance paradigm are arguing is that “network governance” comes to fill up the empty space that hierarchies and markets are increasingly producing in regulatory practices.

### **Complexity & Policy-Making**

Therefore, as it is typically acknowledged nowadays, there is the need for an administrative re-organization because of the observed tensions between the functional approach usually followed by governments and the increasing complexity that modern societies are exhibiting (Lebessis & Paterson, 1997). For instance, in the EU Science & Society Action Plan, the rationale for the new research and foresight must be sought and thought “in view of the complexity of relations between science and society” (EC, 2001b, p. 19). Thus, the key concept is that of ‘complexity,’ a concept paradigmatically inscribing most of the claims in the ongoing discussions about the new recombination of science with society. This is why in this section we are going to be concerned with how complexity (or better said complexities) are put in action in the context of policy studies.

However, to define complexity is beyond the scope of the present essay (not to say that it still appears to be an open, unresolved, theoretical question). Just to give some hints, we can say that complexity is a property of things or processes (or systems), which distinguishes them from those which are simple (or ‘complicated,’ on the other end) in terms of a number of various attributes, such as: relational structure, holistic orientation, multiplicity of scales (either in space or in time), irreducibility (in its parts or in other references), multiplicity of legitimate perspectives, contextualized signification, representational incompleteness, emergence, reflexivity etc. (Funtowicz & Ravetz, 1994; Gallopin *et al.*, 2001; Law & Mol, 2002).

Let us give an example from political philosophy drawing on the work of Walzer. In his book *Spheres of Justice* (1983), Michael Walzer argues against the singularity of John Rawls’ theory of justice. For this purpose, Walzer builds his version<sup>2</sup> of justice on a set of multiple orders that he calls ‘spheres of justice.’ Each of these domains have their own way of distributing justice, wealth and power but also any other social good. Furthermore, Walzer calls ‘complex egalitarian’ a society that is sustaining these spheres on the basis of certain autonomous distributive mechanisms, which are imposing strong limitations to the conversion of one social good into another. Apparently, Walzer’s scheme of a ‘complex equality’ is an elegant conceptualization of a social complexity on defense of pluralism and equality, which is exhibiting some of the defining characteristics of the concept like rich multiplicities and rigid irreducibilities.

Thus, when complexity theories enter the arena of policy studies, it should not elude that policy studies themselves – but also society (and science, of course) – are by their own constitution highly complex fields. As a result, one could wonder – slightly paraphrasing Peter Stewart’s (2001, p. 323) “question of social complexity” – do complexity theories give answers to all the hot political and social issues that policy-

makers are trying to answer or are some of them too complex and always elusive to be tamed by these theories? In fact, P. Stewart (critically examining N. Luhmann and other proponents of system theory, critical realism etc.) argues that this is the case with society, in the study of which complexity theories have many weaknesses and rather fail to rigorously model social processes in complexity terms. Thus, when a policy-maker comes to examine the practical utility of complexity theories in policy considerations, she might always bear in mind that not only the object of complexity theories is a complex and stringent entity but (necessarily – from the reflexive point of view) similarly complex and contested are the means and strategies (either cognitive-intellectual or pragmatic-political) typically used to approach this entity.

Nevertheless, the previous criticism does not intend to diminish the success that modern complexity theories have in the context of systems-theoretical or cybernetic, mathematical-computational, physical and biological sciences. There are many examples from the latter sciences, in which remarkable advances by complexity theories are observed, such as in the cases of chaos and nonlinear dynamical systems, fractals, algorithmic complexity, self-organization, autopoiesis, organizational complexity etc. As a matter of fact, it is the rich analytical insight gained from these fields that policy theorists can use in their investigations in order to confront the real complexities of the contemporary world (Boudourides, 2000). After all, would it be possible for policy studies to tackle the complexities of the new reconfigurations of science and society without drawing upon the ‘new’ language of the science(s) of complexity aiming to harness social complexities? There is nothing wrong with such an appropriation for a field in which reflexivity on the acceptance of made policies and efficiency in their implementation are virtues that count most. Furthermore, up to the degree that the language of complexity can also reflect and sustain the fundamental principles of the Western democratic tradition (as participation-inclusivity, deliberation-responsivity, pluralism-accountability etc.), then it is a pressing challenge for policy studies (in particular) and political theory (in general) to cope with the increasing complexities of modern societies (Zolo, 1992). For this purpose, in the next section, we are going to discuss a certain trope of science policy, which attempts to appropriate<sup>3</sup> fruitfully and to ‘mobilize,’ for a good cause in the policy context, concepts and ideas shared with complexity theories.

### **Post-Normal Science**

This is a science policy trope, which seems to be taking seriously in account the lesson of complexity. Its fundamental thesis is based on the idea of ‘post-normal science,’ a thesis, which has been proposed and developed by Silvio Funtowicz and Jerome Ravetz (1991, 1992, 1993). To see how close to complexity this idea claims to be, it suffices to recall a very popular slogan: “post-normal science as a bridge between complex systems and environmental policy” (Funtowicz *et al.*, 1996, p. 8).

By its name, it becomes clear that this trope intends to outgo the Kuhnian regime of ‘normal science,’ argued to have been ruling the past arrangements of a routine puzzle-solving scientific practice, administered in a similarly simplistic, self-assured and certain policy environment. According to the post-normal science thesis, current problems (mainly originating from environmental debates) demand another style of both science and policy: one which is typically characterized by uncertain facts, values in dispute, high stakes and the need to take urgent decisions (Ravetz, 1999, p.

649). Thus, what is seen to happen under post-normality is nicely described by an inversion of the “previous distinction between ‘hard,’ objective scientific facts and ‘soft,’ subjective value-judgments,” because now “we must make hard policy decisions where our only scientific inputs are irremediably soft” (*ibid.*).

This is why, when the “textbook analogy fails” and the demand of quality of decision-making (both in terms of processes and outcomes) becomes increasingly crucial, the proponents of post-normal sciences resort to two concepts – ‘systems uncertainty’ and ‘decision stakes’ – in order to seek the locus of the new science policy in relation to more traditional problem-solving strategies (Funtowicz & Ravetz, 1991, 1992, 1993). Uncertainty signifies the limitations or the unavailability of confident knowledge about the ways systems function; stakes indicate the magnitude of consequences when adopting one view over another, i.e. the value-sensitivities or the value-ladenness of policy decisions. When both uncertainty and stakes are small, traditional research and expertise do the job, without having to pay any attention to value-laden considerations. When either one (or both) of them is medium, routine techniques are not enough, making necessary the appeal to ‘professionally consultancy’ (as are the services provided by surgeons or senior engineers). Post-normal science emerges when either (or both) of these key issues is high. Then the accentuated intensity of these issues unavoidably raises inferences, which necessarily have to be conditioned by the values held by the involved stakeholders (in contrast with the ‘value-free’ character of traditional science).

One of the main implications derived from this thesis refers to the claim of the particular cognitive demands set up by post-normal science. These are special needs in relation to “direction, quality assurance, and also the means for a consensual solution of policy problems in spite of their inherent uncertainties” (Funtowicz & Ravetz, 1991, p. 145). What these needs necessitate – so the argument goes – is the mobilization of an ‘extended peer community’ (p. 149) in order to extend the quality assurance character of conventional (normal) science policy mechanisms. The post-normal extended peer community consists of all stakeholders, potentially affected by policy decisions at issue, who are expected to offer their ‘extended facts,’ which are covering, for instance, all sorts of local knowledge, anecdotes, community based research, personal and communal value commitments etc. (Ravetz, 2001, p. 6). Therefore, broadening<sup>4</sup> the framing of an issue – at the level of admission of uncertainties, value-loadings and recognition of the right of all interested parties to speak out and be heard by policy-makers – is adding a tone of ‘openness’ and (democratic) ‘participation’ in policy processes of decision-making, otherwise condemned to failure if they were based solely on the purely technical dimensions of the issue (*ibid.*). However, the implicated further extension of democracy by citizen mobilization is not the main concern here – it is merely believed that the involvement of a larger constituency of peers, covering different kinds of knowledge, will contribute to the accomplishment of high-quality policy outcomes. Nevertheless, as Ravetz remarks, such opening in public participation does not necessarily result a restoration of trust in official scientific expertise, because through these processes the public might become “even more suspicious of government assurances of safety” (pp. 6-7). In any case, these are the stakes of the “‘post-normal’ world of science policy, in which scientific demonstrations are complemented by stakeholder dialogues ... all sides come to the table with full awareness that their special commitments and

perspectives are only a part of the story, and with a readiness to learn from each other” (p. 15).

The post-normal science approach has already proved attractive enough as a policy framework to deal with global environmental issues (including global warming) – for instance, as adopted by O’Riordan & Rayner (1991) – and it has provided concrete tools for the management of uncertainties – like the NUSAP (Numerical, Unit, Spread, Assessment, Pedigree) scheme (Funtowicz & Ravetz, 1990). However, this approach has also attracted a number of severe criticisms (Jasanoff & Wynne, 1998; Yearley, 2000). These criticisms mainly focus on the following points (for the first two points see Wynne [1992] and next section):

- Negligence of qualitative differences among forms of not-knowing or incertitude.
- Questionable ‘objective’ measurability and comparability of the two principal dimensions of uncertainty and stakes.
- Disregard of the interdependencies between uncertainty and stakes, two dimensions which neither in principle nor in practice can be considered to constitute truly discrete entities: contests over the stakes are always inseparable from claims about the uncertainties (Yearley, 2000, p. 110).
- Insufficient justification of why and how the claim on the advisability of extended peer review follows from the theoretical premises of the post-normal condition. Steve Yearley (2000, pp. 109-110) has assessed that the argument of the post-normal science thesis looks less convincing in cases near the axes of the two principal dimensions (uncertainty and stakes), such as, for example, the case of cosmology (high uncertainty, low stakes) and the case of various disasters (high stakes, low uncertainty). Yearley has argued that the problem with post-normal science in such cases is an incomplete explanation of the rationale and scope of public involvement in knowledge production and certification, sometimes together with a false identification of the required qualification for participation, i.e., the elements and constituencies of the extended peer review involvement. Furthermore, given the frequent public mistrust to expertise, Yearley doubts whether the publics might be eager to adopt the role only of peer-reviewers (p. 120).

### **Types of Uncertainty**

According to Jerome Ravetz (1997, p. 6), uncertainty is a non-quantified form of risk and it may unfold in many versions ranging from sources of statistical errors (and notions of confidence intervals) up to various considerations of ignorance. In particular, Ravetz considers that two forms of ignorance are very important. One is what he calls “policy-critical ignorance,” referring to the case “when there are no parameters, no theories, hardly any guesses, to supply a necessary foundation for policy decisions. Such was the case in the early days of the BSE/neo-CJD crisis” (*ibid.*). But there is another notion of ignorance that Ravetz calls ‘ignorance of ignorance’ and he considers it to be the most dangerous of all. By this, Ravetz means a social construction of false beliefs on the possession of the necessary knowledge or simply unawareness that “there is something out there getting ready to impact on us” (*ibid.*). Ravetz holds that, based on the Cartesian legacy of the “suppression of the tradition of awareness of ignorance” (Ravetz, 2001, p.13), our previous scientific methods were “designed around the achievement of positive knowledge and the

fostering of ignorance” (p. 7), i.e., they were built upon the notion of ‘ignorance of ignorance’ (p. 13). Therefore, to come to grips with our ignorance is not a trivial task and Ravetz believes that “this will be a major task of philosophical reconstruction,” which will need to take us back to the thought of Socrates, through a “wholesale reform of philosophy, pedagogy and practice” (p. 13).

Brian Wynne (1992) has developed an alternative approach to conceptualize uncertainty from a more diagnostic than prescriptive point of view (Yearley, 2000, p. 111). Instead of locating uncertainty on an “objective scale,” as Wynne considers that Funtowicz and Ravetz have done, he is trying to compose a list of different forms of not-knowing, “overlaid one on the other,” depending on the breadth of “social commitments (‘decision stakes’) which are bet on the knowledge being correct” (Wynne, 1992, p. 116). Thus, Wynne’s taxonomy (1992, 2001), drawn upon a number of previous models of uncertainty – such as the work of Smithson (1989, 1991) – is an attempt to make some key distinctions on the following seven categories of uncertainty:

- *Risk*: system behavior is basically known and chances of different outcomes can be quantified probabilistically – “know the odds.”
- *Uncertainty*: important system parameters are known but not the probability distributions – “don’t know the odds.”
- *Ignorance*: knowledge about the system and likelihoods of its outcomes escape recognition – “don’t know what we don’t know” or “unknown unknowns.”
- *Indeterminacy*: issue, conditions and causal chains are all open-ended and “outcomes depend on how intermediate actors will behave” in non-determinate behavioral processes.
- *Complexity*: open behavioral systems and emergent, multiplex, ‘non-linear’ and irreducible processes.
- *Disagreement*: divergence over observation, framing and interpretation of issues.
- *Ambiguity*: contested or unclear meanings of the issues and, hence, of the process key-elements.

To depict the first four types of uncertainty, we are going to use a schematization of Brian Wynne’s (1992) categories according to a slightly reworked version of a model proposed by Andy Stirling (1998). In this scheme two are the salient dimensions: (i) public knowledge about outcomes and (ii) technical knowledge about likelihoods of outcomes. The first dimension varies between two forms of knowledge of outcomes, uncontested (and well-defined) and contested (or/and poorly-defined, even not defined). The second dimension is expressed by the level of existing or available statistical estimations of outcomes, which may vary between situations of complete lack of any causal inferences and determinations (non-determinacy) and cases when a stochastic (probabilistic) analysis is feasible. Thus, Fig. 1 distributes these four types of uncertainty as follows:



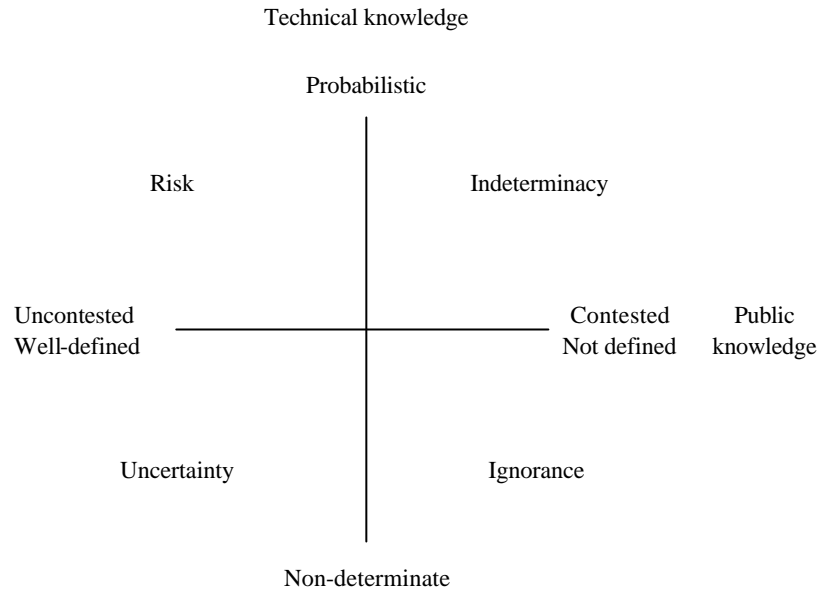


Fig. 1. Types of uncertainty (Wynne, 1992; Stirling, 1998).

Note that the above schema is nothing more than an indicative representation, in the sense that the types of uncertainty might either fit somewhere in between the poles of social/technical knowledge or even overlap and share possibly common characteristics. This is how Wynne describes the situation: Although “conventional risk assessment methods tend to treat all uncertainties as if they were due to incomplete definition of an essentially determinate cause-effect system ... many risk systems embody genuine indeterminacies which are misrepresented by this approach.” Because “the scientific knowledge which we construct ... is also pervaded by tacit social judgement which cover indeterminacies in that knowledge itself” (Wynne, 1992, p. 116).

Failings as the above of traditional risk management techniques have been elaborated by Wynne (1996a, 1996b) in the context of his case study of how scientists and the government have attempted to deal with the Chernobyl fallout on upland Cumbrian sheep farms. The way Yearley has epitomized Wynne’s main arguments, Wynne appears to claim two things in relation to how experts and the public are dealing with all these types of uncertainty. On the one hand, the weakness of experts is their tendency to treat all forms of not-knowing as quantifiable risk, while the public is deciding whom to trust through her lay contextual insights. On the other hand, in relation to matters of ignorance and indeterminacy, the public is proven to be significantly more expert than the scientists (Yearley, 2000, p. 111).

In fact, Wynne’s diagnosis locates an insurmountable predicament on traditional practices of expert-based policy-making: “Through their rationalist discourses, modern expert institutions ... *tacitly and furtively impose prescriptive models of the human and the social upon lay people, and these are implicitly found wanting in human terms*” (Wynne, 1996b, p. 57). As Alan Irwin and Brian Wynne have argued, “science ... offers a framework which is unavoidably *social* as well as technical since in public domains scientific knowledge embodies implicit models or assumptions

about the social world” (Irwin & Wynne, 1996, pp. 2-3). Therefore, Wynne expects that sustainable policy decisions, based on broader sociopolitical commitments, may arrive when the public resists this ‘furtive imposition’ and raises questions about the limits of applicability of scientific models or about its underlying social assumptions. In other words, Wynne’s plea is that the broader uncertainty – ignorance and indeterminacy – should be embraced and debated, in open-ended and case-by-case forms of deliberations, by all involved stakeholders, rather than being arbitrarily banished or ignored or routinized/institutionalized, as the dominant tradition of expert policy-making would recommend. Similarly, in an attempt to formulate a theoretical approach to the operationalization of ‘post-normal’ extended peer communities, Stephen Healy (1999) has rediscovered the crucial role that might be played by uncertainty, ignorance and indeterminacy: “If we are to clarify how extended peer communities may be institutionalised we must first understand how they might be configured and extended facts enrolled. A particular opportunity to achieve both these aims is granted by uncertainty ... [by] extended multidimensional conceptions that embrace both ignorance ... and indeterminacy” (Healy, 1999, p. 656).

### Uncertainty in Policy Processes

We are going now to reflect on another uncertainty-based model of policy-making logic proposed by Claudio Radaelli (1999, pp. 47-49) and also discussed by Luigi Pellizzoni (2001a, pp. 206-208). In this model, policy processes are understood in terms of two dimensions: the salience of the issue at stake and its level of uncertainty (Fig. 2). When both salience and uncertainty are low, the policy process follows a bureaucratic logic, by which the involved actors are competing and bargaining for the control of the issue. When salience is high but uncertainty is low, traditional political conflicts in decision-making are setting up.

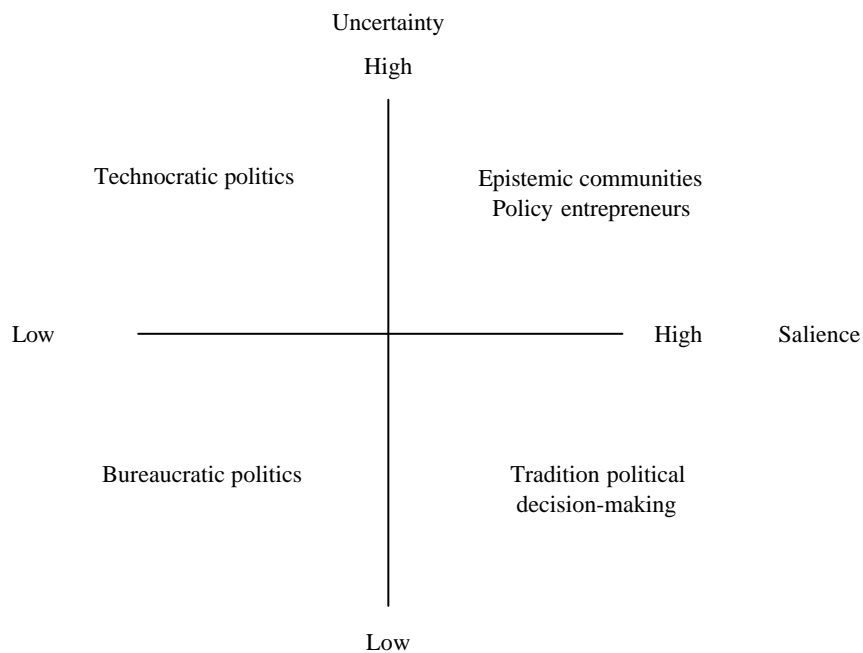


Fig. 2. Uncertainty and salience in policy processes (Radaelli, 1999, p. 48; Pellizzoni, 2001a, p. 208).

When uncertainty is high, then experts turn out to play a prominent role, because in these situations knowledge might be either a scarce and costly resource, which is highly contested, or it might be even controversial (Pellizzoni, 2001a, p. 207). In the former case, only the means to solve a problem are ill-defined, neither the structure nor the goals of the problem: new knowledge is needed to fit into an existing theoretical scheme so that a solution might be found to the problem and this knowledge is uncontested in its description and its rationale. In other words, in this case, uncertainty is reduced to lack of proper scientific knowledge, which should be (or is expected to be) recovered in the future by further scientific research. Pellizzoni identifies this type of uncertainty with the one typically addressed by rational choice theory. Apparently, this is an issue, which can be entrusted to expert advisory bodies, and, thus, its salience remains low. Consequently, when uncertainty is high but salience is low, then the policy process typically follows a technocratic logic.

However, high uncertainty of an issue may occur because of other reasons too, such as: (i) when existing knowledge is unsettled yet (either cognitively or normatively) and subject to alternative interpretations or different scientific methods, theories or disciplines; (ii) when there exist persistent disagreement and controversies among experts; (iii) in cases of indeterminacy or ignorance. Note that the first and the last sources of uncertainty are connected, as Silvio Funtowicz and co-workers have so clearly explained: “The framing of the problem also frames our future ignorance, for what is excluded from enquiry also frames our future ignorance” (Funtowicz *et al.*, 2000, p. 333).

This is a different type of uncertainty from the previous one of rational choice theory, because now not only the means but also the structure and the ends (goals) of the issue are contested. Pellizzoni calls it ‘radical’ (or deep) uncertainty (*bid.*). Note that radical uncertainty is a typical case of an ‘intractable controversy’ (Schoen & Rein, 1994), as in a plethora of examples in environmental and techno-scientific issues (for instance, GMOs, BSE, electromagnetic fields, climate change etc.). Intractable controversies differ from simple routine political disagreements in that the latter can be resolved by appealing to facts and using a standard techno-scientific (rational) argumentation. On the contrary, in the former, the parties in a dispute tend to use or emphasize different facts, interpret them differently and resort to conflicting theories. There is no consensus either on the relevant knowledge or on the disputed principles: “facts and values overlap” (Pellizzoni, 2001b, p. 6). Otherwise said, a controversy is intractable when the usual strategies of conflict management cannot apply (Hisschemoeller & Hoppe, 1996).

In the case of a radical uncertainty, the structural disagreement on an issue is automatically triggering a generalized conflict around the issue, which is automatically raising up the salience of the issue. Then, in situations of high uncertainty and high salience, Radaelli (1999, p. 48) and Pellizzoni (2001a, p. 208) argue that two (heterogeneous) sets of involved stakeholders may take the lead: epistemic communities and policy entrepreneurs. Epistemic communities, which are playing a key role in international environmental policy, are networks of “professionals with recognized expertise and competence in a particular domain and an authoritative claim to policy-relevant knowledge within the domain or issue-area” (Haas, 1992, p. 3). They are defined by shared beliefs, common knowledge and policy experiences and their influence comes from their institutionalization and from the

support of organized interests that they receive. Policy entrepreneurs are individual or collective actors who have the power to influence a policy area (King & Roberts, 1987). They are clustered around concrete policy discourses (Hajer, 1995), in which they reframe and process policy issues through ‘narrations’ shared by different actors.

Concerning now the policy outcomes of processes involving different levels of uncertainty, Luigi Pellizzoni (2001a, p. 209) suggests that these outcomes can be mapped in terms of two dimensions: knowledge (which essentially amounts to uncertainty) and policy discourse. Knowledge can be assumed to be either uncontested or contested. Policy discourse can be framed either (i) on a unitary or consensual basis or (ii) on a pluralist or dissenting setting; typically, a technocratic framing would favor the former discourse, while a traditional political framing the latter. Then the following four kinds of policy outcomes can result (see Fig. 3).

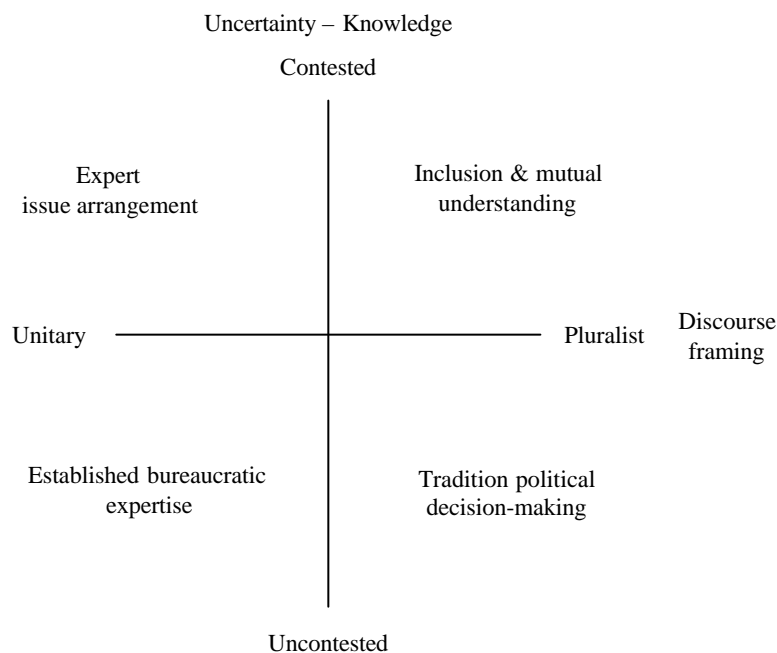


Fig. 3. Uncertainty and discourse in policy processes (Pellizzoni, 2001a, p. 209).

When the discourse is unitary, then the outcome is either an established bureaucratic policy, if the knowledge is uncontested, or an expertise-based arrangement, if the knowledge is contested. When the discourse is pluralist but the knowledge is kept uncontested, then the discourse framing of traditional politics is the expected policy outcome. However, the situation is more complicated, when the discourse is pluralist and the knowledge is contested, depending on how much attention is given to the issue outside specialist circles, i.e., the degree of public coverage given to the debated controversy. Typically, in this case, the policy outcome is that of an inclusion of an extended number of involved actors (in accordance with the policy setting of post-normal science) and an orientation to mutual understanding among these actors. Apparently, such an outcome is more flexible than what might have resulted from traditional technocratic authoritarianism or strategic bargaining-negotiation (as suggested by rational choice theory).

## Questioning Expertise

From the discussion of the previous section on how uncertainty might structure various configurations of policy processes, it is evident that expertise plays a prominent role in many cases. But how is expertise defined and usually conceived? Arguing with Claudio Radaelli (2002), it is more convincing to associate experts less with specific intentional or behavioral features of the actors and more with the structure in which they are enacted and operate. In this sense, expertise usually comes from a multiplicity of structures or domains of epistemic, bureaucratic and technocratic policy-making, such as (cf., Radaelli, 2002; EC, 2001a): (i) communities of scientists, ad hoc or ‘independent’ experts, consultancies and scientific advisory committees; (ii) ‘stakeholders’ or various ‘holders’ who possess some quality of resource that entitles them to participate in a governance arrangement (Schmitter, 2002, pp. 62-63; more in the next section); (iii) ‘in-house’ experts, ‘fonctionnaires’ of the European Commission (EC) or other European agencies, including expertise developed through the research policy of the EC, or working within national ministries, diplomats, etc.

As Luigi Pellizzoni (2001b, pp. 2 and 7) has argued, there are not a few instances when the two fundamental commitments of the social contract of science with society – disinterestedness and objectivity – become problematic in the ways expertise is trying to implement them. In fact, when policy- or decision-makers are asking experts to provide them with disinterested and objective factual considerations, it is generally assumed the validity of two ideal principles, which should inspire the work of experts. On the one hand, it is expected that experts’ assessment can be either value-free or, otherwise, at least based on value differences, which can be measured univocally (e.g., in economic terms). On the other hand, experts’ conclusions are expected to be either unanimous or, otherwise, at least, in a state of temporary disagreement, which could be later reconciled by means of a closer scrutiny or deeper deliberation among a wider circle of experts. However, in reality, things turn out to be quite different, as Pellizzoni is arguing, in many instances, when these ideal premises are falsified. Examples are abundant in cases of:

- (i) safety, threatened by hazards or accidents as, for instance, in circumstances of environmental risk (Irwin, 1995, 2001) or even risks provoked by business, in particular by multinational enterprises (Ravetz, 2001, p. 2);
- (ii) unintended consequences produced by ‘side effects’ of such developments, as, for instance, in GMOs and GM food, xeno-transplantation, human genome etc. (Ravetz, 2001, p. 3);
- (iii) intractable disagreement or unsettled controversies among experts, who are striving to preserve their authoritative power over science and technology by all means, as, for instance, in the case of the regulatory conflicts in the EU over GM crops (Levidow *et al.*, 2000).

What results from all these cases is a growing conviction about the contextual and socially constructed character of knowledge production; this is the perception of what Pellizzoni (*ibid.*) has called ‘plasticity’ of scientific knowledge in order to highlight its subordination to political and economical interests but also its social and cultural malleability.

But why do experts possess such a privileged position among institutions and the public in the European conception and architecture of policy-making? According to Andersen and Burns (1996), experts constitute one of the three main forms of representation in the EU (together with interest groups and single countries). However, the fact that from its creation the EU has focused on regulatory (rather than on distributive or re-distributive) policies aiming to efficiency and considering knowledge to be their main asset explains the dominant position given to experts. As many have remarked (cf., Pellizzoni, 2001a), this orientation has some negative consequences in EU policy-making, such as an increasing de-politicization, lack of transparency and low public accountability.

Furthermore, expertise might be considered to be suffering from a lack of public legitimacy and, thus, to become problematic in at least two aspects: representation and knowledge (Radaelli, 2002). According to Claudio Radaelli (pp. 198-199), when expertise is represented in a process of public policy, what is in action is a different notion of representation than, say, when a person or an organization is entitled to represent a certain political, social or economic entity. In fact, what is claimed to be represented in the former case is just knowledge as a highly valued resource in the policy-making process. But the concept of knowledge is qualitatively different from that of a political, social or economic identity, which would be expected to participate or to be represented in the former case. This is what Radaelli calls the ‘anthropomorphic’ view of knowledge, i.e., a tendency to define knowledge in relation to certain actors (e.g., experts or knowledge-holders or ‘guardians’ in Schmitter’s terminology – see below). But then, the crucial question to answer is: What makes knowledge a more critical resource in policy-making than, say, money or votes and gives advantages to knowledge ‘guardians’? According to Radaelli, it is what he calls the ‘cognitive structure’ of the policy process the factor, which attributes such a prestige to experts. As Radaelli argues, the ‘cognitive structure’ is a social and cultural construct, which “provides interpretation, representations of political events, learning opportunities and ‘lenses’ that give focus to interests and behavioral codes” (p. 202). This is why Radaelli suggests that to democratize expertise should involve multiple strategies in different dimensions, including civic education, the media and culture.<sup>5</sup>

### **Participation & Policy-Making**

We have seen before that the mandate of the democratization of expertise through an increasing expansion of participatory processes is a commonplace now among policy- and decision-makers due to the extremely dramatic nature of the problems raised up in the context of the present-day knowledge-based society and economy. Thus, the prevailing issue becomes now that of participation, which desperately calls for solution, if viable and sustainable policies are to found to all these problems.

To approach the issue of participation, we are going to revolve around five main questions about participation that Philippe Schmitter (2002, pp. 58-67) and Luigi Pellizzoni (2001b, pp. 3-6) have recently raised and discussed: (i) Why and for what purpose are participatory arrangements appropriate (chartering)? (ii) Who is entitled to participate and how is she or he selected (composition)? (iii) How is participation implemented (procedures)? (iv) How are participatory processes connected with

decision-making (decision-rules)? (v) How are they connected with the problem setting (agenda-setting)?

On the chartering question, Philippe Schmitter has based his analyses around the research of Eleanor Ostrom (1990) on issues of 'governing the commons' and the management of 'self-organized, common-pool resource regimes.' In this sense, Schmitter (2002, pp. 59-60) highlights the following attributes (originally suggested by Ostrom), which might assure a sustainable performance of participatory arrangements: (1) Feasible improvement, aiming to enhance only resource settings that are not at a point of deterioration (or underutilized). (2) Development of common indicators to measure the flow of information and to establish operational benchmarks of 'best practice.' (3) Guarantee of predictability so that resource units do not differ spatially and are not subject to 'local' interpretation. (4) Flexible adaptation of the resource system into particular spatial contexts (national and regional).<sup>6</sup>

On the composition question, Schmitter (2002, pp. 60) suggests the following three attributes that participants ('appropriators of the resource system' in Ostrom's terminology) should exhibit: (1) Saliency in the sense that they should possess a significant interest in the issue and they are capable of convincing their 'followers-employees-clients' to comply with the decisions derived in the context of the participatory process. (2) Common understanding of how the resource system operates and how participants' interactions affect it. (3) Low discount rate in relation to future benefits to be achieved from the resource (something which depends on the development of sufficiently high levels of trust so that actors would tend to abstain from short-term 'opportunistic' benefits).

Moreover, Schmitter (2002, pp. 62-63) identifies seven qualities or resources, which define the entitlement to participate (and the identity of participants): (1) rights (citizens); (2) spatial location (residents); (3) knowledge (experts or guardians); (4) share (owners); (5) stake (beneficiaries-victims); (6) interests (spokespersons); and (7) status (representatives).<sup>7</sup>

On the procedural question, Schmitter (2002, pp. 67) proposes five very general guidelines that participatory arrangements should follow: (1) The precautionary principle, in cases that the available knowledge is incomplete or uncertain, which would demand calculations according to the worse-case scenarios in order to avoid potential costs than to maximize potential benefits. (2) The forward-regarding principle, which would demand calculations on the basis of the furthest future projection and, thus, necessitate that some participants develop a long time perspective. (3) The subsidiarity principle, which would restrict dealing only with issues that could not be resolved at a lower level decision body. (4) The principle of (partial) transparency, which would allow public dissemination of the proceedings of a process only once a decision has or has not been made but never during the period the process takes place. (5) The principle of proportional externalities, according to which no decision should be taken when its effects in social, economical and political terms are disproportionate either to the original expectations of the charter of the participatory arrangement or to the standards of fairness in society.

On the decision-rules question, Schmitter (2002, pp. 65-66) discusses the following eight principles of fair decision-making: (1) The principle of 'putative' equality,

which would exclude discriminations of any kind in the treatment of participants. (2) The principle of horizontal interaction, which would regulate smoothly and flexibly internal organizational arrangements in participatory processes. (3) The consensus principle, which would necessitate that decisions are taken through deliberation by consensus rather than by vote or imposition. (4) The 'open door' principle, which would allow participants' exit without the imposition of any sanctions against the withdrawing members. (5) The proportionality or reciprocity principle, which would roughly weigh attained outcomes with respect to the assets that the participants are contributing. (6) The principle of shifting alliances, which would guarantee mobility among participants' positions during the process of consensus formation. (7) The principle of 'checks and balances,' which would assure the consistency of decisions taken among decision-making processes at different levels. (8) The reversibility principle, according to which all decisions could potentially be annulled or reversed by citizens either directly through referenda or indirectly by their representatives in higher level decision-making bodies.

Through a different perspective, Luigi Pellizzoni (2001b) approaches the entitlement issue, based on a distinction between two fundamental types of participatory schemes: opinion-oriented and position-oriented. An opinion-oriented participatory arrangement is composed of public participants concerned with "highlighting, confronting, and clarifying a constellation of general opinions and ideas, principles and values" (Pellizzoni, 2001b, p. 4). On the other side, an opinion-oriented participatory arrangement is composed of stakeholder participants, who aim to "addressing in a cooperative and dialogical way a dispute among well-defined social positions having a direct stake in an issue" (*ibid.*).

Thus, drawing upon concrete case studies of European experiences (EUROpTA, 2000) of Participatory Technology Assessment (PTA), Pellizzoni remarks the following differences with regard to the entitlement issue of participatory arrangements (pp. 4-5): In a public PTA, participants are defined through their normative competence, as this is expressed by their opinions, preferences, principles and values. No cognitive or intellectual competence is expected in a public PTA. Although the normative competence of a stakeholder PTA is expressed by participants' interests and stakes, these stakeholders are also expected to possess a cognitive competence too. They participate not only in order to assure their legitimacy but also in order to contribute to processes of both problem-setting and problem-solving using the privileges of their professional, social, economic or spatial (territorial) positioning. The latter privileges are what constitute the 'positional insight' of such participants (stakeholders).<sup>8</sup>

With respect to procedural issues of PTA, Pellizzoni (2001b, p. 5) has distinguished differences again according to the type of the participatory arrangement. For opinion-oriented PTA, he argues that the dilemma is to form a general consensus or to follow the majority rule. On the other side, for position-oriented PTA, he claims that the dilemma is to reach consensus through discussion or strategic bargaining.

On the decision-rules issue, David Guston (1999) has posed a general framework for evaluating the impact of participatory arrangements according to the following three dimensions of impact: (1) Categories of impact (actual impact, impact of general thinking, on training of knowledgeable personnel, on interaction with lay knowledge).



(2) Target of impact (policy, politics and people). (3) Type of impact (substantive, procedural, reflexive).

On the decision-rules question, Pellizzoni (2001b, p. 5) again is interested in highlighting differences in decision-making between the two types of PTA. In public PTA, participants are more concerned in the production of indirect effects (for instance, by stimulating political changes for further investigation) than a direct impact of the decisions. In stakeholder PTA, what characterizes participants is that in the decision process they are reluctant to abandon their usual fixed ideas, routines and habits and to adopt an open-minded attitude and criticize existing power relations in favor of a more balanced representation of positions.

With regards to the agenda-setting question, Pellizzoni (2001b, pp. 3, 5-6), using ideal-typical terms, distinguishes between top-down and bottom-up approaches in relation to whether the agenda is set up and controlled by the promoters or the participants in the process. In public PTA, Pellizzoni claims that a truly bottom-up approach is rather problematic since the average participant is not prepared cognitively, normatively and politically to affect and reorganize the agenda. Thus, in such situations the 'threat of manipulation' is present. In stakeholder PTA, the problem is, Pellizzoni thinks, that a top-down approach might not so much raise the problem of manipulation as rather the possible expulsion of some participants from the process. Moreover, in such situations, Pellizzoni argues, the main problem is the 'threat of strategy,' depending on how stakeholders are behaving in terms of usual interest negotiation.

In a further attempt to formalize a classification of participatory approaches to policy-making, Luigi Pellizzoni (2001a, pp. 215-218) has singled out two dimensions: purpose of participation and agenda-setting. In the first dimension, the purpose of participation is distinguished according to whether it is deliberation- or decision-oriented. In the second dimension, agenda-setting (or issue-definition) is distinguished according to whether it is top-down or bottom-up. Then the following arrangements of four policy approaches result (Fig. 4): (1) Referenda, which may be taken as an example of a decision-oriented and top-down approach. (2) 'Citizen bills,' which constitute decision-oriented bottom-up citizen initiatives. (3) Consensus conferences, as typical examples of deliberation-oriented bottom-up approaches. (4) Citizen advisory committees, which constitute small groups of participants-discussants (i.e., discussion-oriented) selected by promoters (thus, obeying a top-down logic). Of course the last two approaches are just two characteristic examples among many others (Rowe & Frewer, 2000).

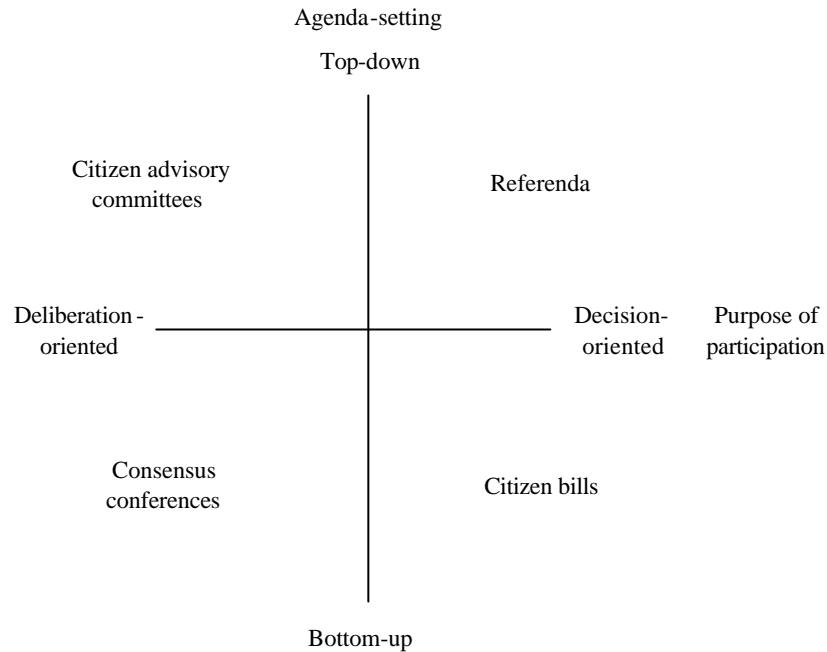


Fig. 4. Approaches to participatory policy-making (Pellizzoni, 2001a, p. 216).

### Participation & Deliberative Democracy

To be able to discern the characteristic attributes of concrete participatory forms and arrangements, one needs to reflect further on the composition question. In particular, from the selection criteria used to answer this question, one could derive some analytical typologies of the inclusive or exclusionary character of participatory arrangements. To do this, we are going to follow again Luigi Pellizzoni's (2001a, pp. 212-213) distinction between two dimensions of participation: (i) a normative and (ii) a cognitive dimension. Depending on around which issues – related to concerns or knowledge – participation is focused, the resulting arrangements can be either inclusive or exclusionary. Then, taking together these dimensions, four models of policy-making may be distinguished (Fig. 5): (1) The technocratic model, based on a double exclusion: Experts are defining both the problem and the solution and are not allowing any political process of interaction, negotiation or deliberation with laypersons. (2) The model of traditional politics, which is inclusive with respect to values and concerns but exclusionary with respect to the cognitive dimension: Experts are framing unquestionably the technical contents of the issue but all other stakes are permitted to be debated, negotiated and shared among all the participants. (3) The neo-corporatist model, which allows debate and negotiation among a limited number of involved stakeholders, representing concrete interest groups and organizations: Only these participants can provide their insights in the cognitive processes of problem formulation and solution – the concerns of any other participants are excluded from the normative process of decision-making too. (4) The model of deliberative democracy, which is inclusive in both dimensions: It acknowledges the relevant insight from every participant and it incorporates the whole range of expressed concerns from the whole society.

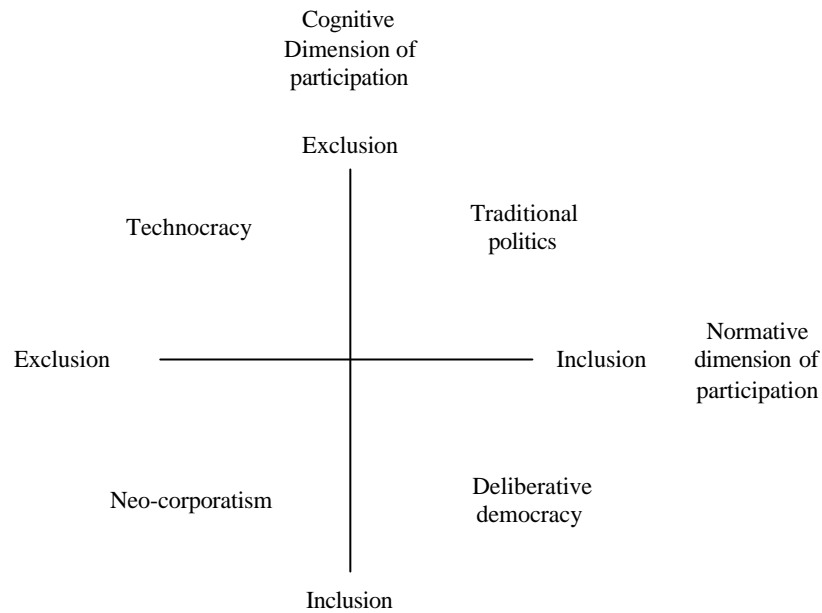


Fig. 5. Models of participatory policy-making (Pellizzoni, 2001a, p. 213).

Clearly, on the composition question, the tradition of deliberative democracy shares the value of ‘popular inclusion’ with participatory liberalism. But there is a difference in the way this inclusiveness is now comprehended. For participatory liberal theorists, inclusion is an end in itself (Barber, 1984). For deliberative democracy, “the ultimate goal is a public sphere in which better ideas prevail over weaker ones because of the strength of these ideas rather than the strength of their proponents” (Ferree *et al.*, 2002, p. 301). In particular, a well functioning public sphere should include actors from the ‘periphery,’ i.e., autonomous (‘autochtone’) actors that Jürgen Habermas (1984) was associating with the ‘life-world’ of citizens. These actors, by their dialogue with the center, might subscribe to an ‘ideal speech situation’ and, thus, contribute to the fostering of more deliberative speech.

However, deliberative theory challenges the ideals of democracy supported by representative liberal theorists, which are based on preference-aggregative political processes or on bargaining among conflicting interests or on the elitist restriction of the discussion (March & Olsen, 1989). In the words of Luigi Pellizzoni, “the deliberative perspective admits that political preferences conflict, that modern society is pluralist and cannot be viewed as a community with shared goals and principles ... [and] that conflicts can be resolved by means of unconstrained discussion intended to achieve the common good” (Pellizzoni, 2001b, p. 8).

Therefore, “*deliberativeness* is the core value of this perspective, and it involves recognizing, incorporating, and rebutting the arguments of others – *dialogue* and *mutual respect* – as well as justifying one’s own” (Ferree *et al.*, 2002, p. 306). This is grounded on the possibility of reaching consensus on the ‘best argument,’ thanks to the fundamental unity of reason and the invariant structure of language, according to Habermas (1996). Since “mutual understanding is the outcome of a process of abstraction or generalization,” the proponents of deliberative democracy try “to find,

behind different positions, a common set of principles from which the solution to the problem at stake can be derived” (Pellizzoni, 2001b, p. 9).

However, the main criticisms to the arguments of deliberative democracy concern the problem of inequality and the problem of incommensurability (*ibid.*). Inequalities and differences in status, power and the possession of other resources manifest the practical difficulties of the reconciliation between the deliberative democratic ideal and the actual reality of political conflicts. On the other side, incommensurability manifests the difficulties of the rapprochement between different cognitive and axiological positions. Although reason might be a shared quality among humans, its exercise does not always lead to agreement. When there are acute differences in worldviews or problem definition or factual assertions or value assumptions, agreement on the ‘best argument’ cannot always be reached (Pellizzoni, 2001c). In these cases, what is missing is a conceptual framework, which would provide a common measure to compare among different opinions, which is an elementary and necessary condition for deliberation to start. Moreover, beneath the claim of the universalist-rationalist dominant approach, Chantal Mouffe (1999, 2000) has argued, hegemonic pretensions are often hidden.<sup>9</sup> Similarly, Lynn Sanders argues that appeals to deliberation “have often been fraught with connotations of rationality, reserve, cautiousness, quietude, community, selflessness, and universalism, connotations which in fact probably undermine deliberation’s democratic claims” (Sanders, 1997, p. 348).

Finally, incommensurability also raises the issue of the social situatedness of positions, i.e., the issue of positional objectivity (Sen, 1993). Thus, trans-positional, trans-group and trans-cultural assessments may provide a way out of incommensurability and total relativism (Pellizzoni, 2001b, p. 9). Moreover, the possibility of trans-positional assessments should be in principle open to everybody, who may perform critical, local and contextual observations, taking into account different assumptions and descriptions and trying to filter out the false or senseless ones. Hence, Pellizzoni argues, “the aim of deliberation becomes to confront contextual knowledge, different position insights, looking at similarities, isomorphisms, common features among differently framed descriptions of portions of reality, in order to find a shared ‘local’ solution to a problem” (*ibid.*).

### **Concluding Remarks**

We started our investigation by pointing out the complexities of modern governance, which necessarily today – in the knowledge-based society – has to deal with the new ways that science, technology and society are related to each other. In this framework, uncertainty becomes the central policy issue and we saw two approaches dealing with it: post-normal science and Wynne’s diagnostic model. However, uncertainty necessitates participation and deliberation and, thus, we discussed the ways participatory arrangements are actuated through modern policy discourses in order to enhance democratic governance.

So far, so good, in theory. But what’s happening in practice? Is participation solving problems in the way it is implemented in modern governance and policy-making? Some would be reluctant to sign on the effectiveness of participatory policies in concrete contexts and would rather question the underlying structural and normative

assumptions of such policies. To give some characteristic examples, let us discuss two recent criticisms of relevant EU initiatives, which focus (i) on how the latter attain a re-legitimation of decision-making in science and governance and (ii) on what kind of conceptions of civic participation and political engagement these policies are based.

Examining the case of EU policies on agricultural biotechnology, Les Levidow and Claire Marris (2001) are trying to identify the serious problems and misconceptions in the orientation of the EU policy frameworks of science and governance. Their argument is that, in the dominant models of science and technology, a discourse of technological determinism (stressing particular technological imperatives, closely related to competitiveness) is often invoked in order to “promote and conceal social-political agendas, while pre-empting debate on alternative futures” (Levidow & Marris, 2001, p. 345). They argue that, originally during the 1980s and early 1990s, the official policy discourses had adopted a ‘deficit model’ of how the publics were understanding science and technology, according to which lay people were assumed to base their opposition on fear and ignorance. Thus, the need for ‘better communication’ to be disseminated from experts into society.

However, Levidow and Marris hold that subsequently the problem “shifted away from public ignorance to mistrust” and, thereby, the observed crisis of confidence increasingly necessitated ‘better debate’ or ‘stakeholder dialogue’ rather than ‘better communication’ (p. 348). But, they argue, by shifting the issue from ‘how to educate the ignorant people’ to ‘how to regain trust in science,’ essentially the new rhetoric continued to mis-diagnose the problem and to propose inadequate solutions, still drawing upon the same deficient public understanding of science. This explains why, for Levidow and Marris, the proposed ‘new forms of dialogue’ were “sought mainly as a means to restore the legitimacy of science and technology, not as a means to reconsider innovation processes” (*ibid.*).

Furthermore, the official discourses and regulatory procedures, Levidow and Marris claim, were often attributing public distrust to science and technology to ‘extra-scientific’ concerns – for instance ‘ethical’ issues – “as if value-free scientific knowledge was readily available, as if scientific evidence were separable from values, and as if expert advice could thereby stand separate from ‘other concerns’” (p. 349). At the same time, this systematic reinforcement of the notion of a value-free and neutral science was accompanied by a relegation of the ‘extra-scientific’ concerns to a subjective realm, where they would be evaluated differently by actors according to their vested interests and values (*ibid.*).

Levidow and Marris give an example of such a concealment of value-frameworks in regulatory policies in the way the official language and institutional practices distinguish a value-free ‘risk assessment’ from a socially-, politically- or ethically-laden ‘risk management’ (p. 350). But, from our previous discussion of uncertainty and ignorance, we have seen how ill-founded such a distinction is. Therefore, by continuing “to entertain an artificial boundary between (supposedly objective) ‘science’ and (supposedly subjective) ‘other factors’, which are labeled as ‘societal’ or ‘ethical’, or ‘political’” (*ibid.*), Levidow and Marris argue, “rhetorics of openness have tagged onto the dominant models, rather than superseding them” (p. 345).

Thus, Levidow and Marris conclude: “If the aim is to re-legitimise decision-making, government will need to ‘un-learn’ many institutional assumptions and to redefine the problem at stake. Rather than seeking ways to change the public, it is necessary to change the institutions responsible for promoting innovation and regulating risks. In particular they need to change their preconceptions of science, technology and public concerns. In such a process, public concerns offer a useful starting point and social resource for organisational learning” (p. 357).

In a similar fashion, but this time targeting the official conceptions of participation and politicization, Paul Maignette (2001) has addressed a critical appraisal of the European Commission White Paper on Governance (EC, 2001a). In spite of ambitious objectives, Maignette discerns a limited conception of participation throughout the policies stimulated by this document. He claims that an elitist conception of citizenship restricts participation to already organized groups, just favoring sectoral groups and interested parties, who are in a position to use such procedures as petitions, lobbying, appeals to the European Court of Justice etc. Thus, the white paper fails to encourage ordinary citizens and other general members of civil society to become more active. Given also the low levels of civic participation in western democracies, which are lower at the supranational level, Maignette holds that the mere stimulation of citizens involvement only in specific procedures does not suffice to raise up the general level of civic consciousness and participation. Furthermore, these policies, Maignette argues, confine participation only inside non-binding preliminary procedures of non-decision during the consultative, pre-decision stage.

Maignette explains the weakness of civic participation in the European Union in terms of two sets of factors: (i) the clarity of the institutional structures and (ii) the polarity of the party system. With respect to the former, which in principle increases participation, Maignette claims that the existing “large set of channels of representation (Council, EP, CoR, ESC, Cosac) fragments deliberation” (p. 7). With respect to the polarity of the party system, which “simplifies the electoral choice,” he believes that the “Community method hides political conflicts” through the production of a consensus-oriented decision-making. In fact, Maignette holds that “the Community method, based on a long process of informal negotiation and the elaboration of compromise *before* political discussions take place, is a very powerful disincentive for political deliberation” (*ibid.*). After investigating a variety of possible theoretical solutions to the problem, such as institutional reforms and federal constitutionalism, Maignette proclaims for a politicization of the EU, which could generate public interest and broaden public participation. However, he realizes that this can only happen if and when the Commission changes political attitudes and no longer “considers itself to be a body designed to bypass political conflicts and forge compromise *before* political deliberation takes place” (p. 12).

Thus, we see, though widely contested in its theoretical, normative and institutional dimensions, the concept of participation has already expanded in the realm of ‘political symbolism,’ which plays such an important role in the processes of European integration (Wallace, 2000, p. 56). But this is another territory of uncertainty as the present-day international conflicts and geopolitical stakes of the globalized world manifest.

## Acknowledgement

This essay has been motivated by discussions drawn during the ongoing project STAGE (Science, Technology and Governance in Europe) funded by the European Commission under the Framework Programme V. I have benefited enormously from what I have learned from my partners in this project: Peter Healey, Alan Irwin, João Arriscado Nunes, Marisa Matias, Rob Hagendijk, Margareta Bertilsson, Mark Elam, Hans Glimell, Marja Haeyrinen-Alestalo, Karoliina Snell, Egil Kallerud, Vera Schwach and Dimitris Kalamaras.

## Notes

1. Michael Gibbons, Helga Nowotny, Peter Scott and their co-workers are talking about the emergence of a *mode-2* science and society (Gibbons *et al.*, 1994), taking place within the public arena, which, subsequently, the core of these theorists have preferred to call *agora* (Nowotny *et al.*, 2001). Bruno Latour (1998, 1999) proclaims the reconfiguration of the world of science into the *world of research*. Karin Knorr-Cetina (1999) by looking at *epistemic cultures* epitomizes what she considers to be the basis of the present-day knowledge-based society. Silvio Funtowicz and Jerry Ravetz (1992, 1993) preach for the advent of *post-normal science*. Arie Rip and Barend van der Meulen (1996) even talk about a *post-modern research system* and other “higher forms of nonsense” (Rip, 2000). Henry Etzkowitz and Loet Leydesdorff (1997) envisage the co-evolution of science and society through the *triple helix* paradigm. This new science is what has been already called *mandated science* (Salter, 1988) or *post-academic science* (Ziman, 1996) or even *academic capitalism* (Slaughter & Leslie, 1997).
2. Of course, there are other ways too of defining the multiplicities and complexities of justice. In their book *Les Économies de la Grandeur* (1987), Luc Boltanski and Laurent Thévenot prefer to distinguish among ‘styles’ rather than spheres and, thus, to justify actions by the mobilization of multiple styles in every specific situation. In this way, they are able to investigate empirically all kinds of justifications, which are convincing for different people in different settings.
3. It would be more surprising if sometimes we were witnessing the opposite direction of appropriation of representations: ideas, concepts, theories or methodologies first elaborated in the context of social sciences and subsequently migrating or diffusing inside natural or mathematical sciences. Of course, in the present-day conjuncture (the ‘two cultures’ divide, domination of hard sciences etc.) this is rather far from being possible to happen.
4. In the words of Brian Wynne, “science’s greater public legitimation and uptake ... would involve, *inter alia*, recognition of new, socially extended peer groups legitimated to offer criticism of scientific bodies of knowledge from beyond the confines of the immediate exclusive specialist scientific peer group” (Wynne, 1996a, p. 39).
5. Besides all these, the fact is that the democratization of expertise entails finding solutions to some thorny issues and even committing certain compromises or trade-offs. From the point of view of policy-making, Radaelli (2002, p. 203) describes the decisions, which have to be taken in terms of a trilemma among three poles: political legitimacy, policy effectiveness and scientific accuracy. Radaelli argues that all the elements of this trilemma are problematic although they should not be considered always as antithetic. Finally, as the working group of the European Commission has suggested, democratizing expertise necessitates some potential trade-offs, such as between legitimacy and efficiency, simplification and participation (EC, 2001a, p. 7) and between democracy and time (Radaelli, 2002, p. 204).
6. Furthermore, Schmitter (2002, pp. 61-62) considers that the initial establishment of participatory arrangements should be guided by the following six general norms: (1) The principle of ‘mandated authority’ demanding the existence of a clear and well-defined

- mandate as a necessary precondition for a participatory arrangement to be established. (2) The ‘sunset’ principle imposing an expiration date – known from advance – for any participatory scheme. (3) The principle of ‘functional separability’ defining the borders between tasks accomplished by different participatory arrangements. (4) The principle of ‘supplementarity’ determining that any participatory body should not compete with existing political institutions but just supplement them. (5) The principle of ‘request variety,’ according to which it is up to the participatory arrangement to establish its internal procedures and develop its distinctive format, appropriate for accomplishing its tasks and goals. (6) The ‘high rim’ or ‘anti-spill-over’ principle, which will require that changes in tasks are only permitted if the appropriate changes in mandates are issued by the supervising institution.
7. In addition, Schmitter (2002, pp. 63-64) outlines the following four principles that might provide a basis for the justification of the selection of participants: (1) The minimum threshold principle, according to which no participatory arrangement should have more active participants than what is necessary. (2) The stake-holding principle, which would exclude participants without a significant stake in the issue – except knowledge-holders (experts). (3) The principle of ‘European privilege’ – of course, with respect to European governance arrangements – in the sense that all participants should represent Europe-wide constituencies. (4) The adversarial principle, favoring selections of participants who represent constituencies with diverse and opposite interests (including knowledge-holders or experts supporting different or opposing theories and paradigms), so that there might be no preponderance of representatives holding a similar position or forming an alliance for common purpose.
  8. In what concerns the selection question, Pellizzoni (2001b, pp. 4-5) again discerns differences between opinion-oriented and position-oriented participatory schemes. In public PTA, the fundamental dilemma is whether selected participants should act as representatives of others with similar characteristics, interests and values or as citizens, who might decide to transform their characteristics through their interaction and deliberations with others. On the contrary, the basic problem of stakeholder PTA arises in circumstances when certain stakeholders’ interests and positions have low visibility or the organization level of these stakeholders is very poor to permit them to convince their constituencies to comply with the decisions taken in the process.
  9. This is why, in her criticisms of deliberative democracy, Chantal Mouffe envisages politics through a model of radical or ‘agonistic pluralist’ democracy, which would replace the ‘consensualistic’ approach to public deliberation (1999, pp. 755-756). For her, “pluralist politics should be envisaged as a ‘mixed-game,’ i.e., in part collaborative and in part conflictual and not as a wholly co-operative game as most liberal pluralists would have it” (*ibid.*).

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