

Science in a Not So Well-Ordered Society. A Critique on Philip Kitcher's Account of Procedural Democracy

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1. Introduction

Professor Michael Beard, the main character in Ian McEwan's *Solar* (2011), is a well-known scientist and a former Nobel Prize winner, but his personal life is complicated and many years have already passed since his biggest intellectual success, "the Beard-Einstein Conflation". Despite his laments and his feeling almost washed up as a scientist, there are still some certainties he relies on, one of them being that social constructivists are entirely wrong in thinking that there is no such thing as an objective reality independent of humankind. One of his thoughts reads:

"Let the philosophers of science delude themselves to the contrary, physics was free of human taint, described the world that would still exist if men and women and all their sorrows did not." (2011: 8-9)

Beard's career takes a fresh turn when he gets involved in climate change and becomes head of the UK's National Centre for Renewable Energy. However, things become slightly more complicated when he leads a project to develop the WUDU, a Wind turbine for Urban Domestic Use, "a gizmo the householder could install on his rooftop to generate enough power to make a significant reduction in his electricity

bill” (2011: 23). He realizes that climate change, sustainable energy and system transitions are quite different from theoretical physics, his original field of study.

“He had thought it would be a matter of settling the maths for the design, building three or four prototypes and testing them in the tunnel. But more people had to be hired as related issues wormed their way onto the agenda: vibration, noise, cost, height, wind shear, gyroscopic precession, cyclic stress, roof strength, materials, gearing, efficiency, phasing with the grid, planning permissions.”
(2011: 24)

He comes to understand that “what had seemed a simple wheeze had turned into a monster that was eating up all the attention and resources.” It gets even worse. On a journey “to the North Pole...to see global warming for himself” – at least, that is the impression he gives his colleagues, but in fact he is on a luxury boat trip in the Arctic – he meets artists and activists who are engaged in the societal and political aspects of climate change. He realizes that solutions are not to be found solely in the lab, but that it comes down to politics in the end:

“...what was to be done, what treaties were to be made between the quarrelsome nations, what concessions, what gifts should the rich world self-interestedly make to the poor?” (2011: 75)

So here is the bottom line on Michael Beard’s view of things: science is pure, technology is complicated, and politics is messy. He is surely not the only one to think like that. But it is difficult to maintain that this “messiness” is restricted to the domain of politics. A look at some recent debates on science and technology, for example the possible health risks of cell phones, the dangers of radiation posed by Universal Mobile Telecommunication Systems, promises of shale gas and the effectiveness of vaccination campaigns, easily leads to the conclusion that either citizens have lost all their trust in science and technology or that today’s experts are

doing a lousy job. Technological applications but also scientific knowledge itself – as in the case of climate change – are highly contested today.

However, there is an incongruity here. What exactly is at stake in the present situation? Surveys still show a high degree of public trust in science *in general* and an overwhelming number of technologies do not give rise to public controversies, although their risks, costs and social consequences are far from undisputed. So what is the case if “trust” and “reliability” are not the issue?

This paper does not claim that “there is something rotten in the state of science” (although I cannot rule out that this is the case), nor does it state that people have become increasingly skeptical or even cynical about science. Instead, it studies how the relationships between science, politics and society are reformulated in current debates.

In order to do so, it evaluates these relationships from different theoretical points of view: on the one hand, a concept which holds democracy mainly as a mechanism to arrive at legitimate and justified decisions; on the other hand, a concept which emphasizes the continuously changing societal and technological conditions under which democracy has to be re-established. The starting point for this discussion is a critical reading of Philip Kitcher’s *Science, Truth, and Democracy* (2001) and his subsequent *Science in a Democratic Society* (2011). The thesis that will be put forward is that procedural democratic approaches to issues concerning science and technology are not sufficiently equipped to do justice to the *transformative nature* of these issues. Issues such as shale gas have both an epistemic and a political and social dimension. Not only do they give rise to tensions between science and politics in terms of diverging public and private interests and uncertainties on various levels, but they also lead to the formation of new groups of people, “coalitions of unusual suspects” consisting of concerned citizens, activists, lay experts, local companies and NGOs, whose unlikely association in turn affects the nature and content of the debate.

Who are these people whom the sciences ought to be concerned with? Which notion of democracy correctly takes group formation under conditions of scientific and technological uncertainty into account? Is it possible to develop a notion of

politics that takes epistemic issues into consideration? And a notion of science that is sensitive to its place in society?

This paper proposes that an answer to these questions ought to be formulated in a substantive instead of a procedural concept of democracy and that the political theory of classical pragmatism offers valuable insights for doing so. I will develop my argument in the following steps. Section 2 starts with an analysis of a proposal by Kitcher (2001) to arrive at a kind of “well-ordered science” to fuel the interaction between science, politics and society. In Section 3, I will debate some of the presuppositions of Kitcher’s scheme by pointing out that his most recent (2011) defense of well-ordered science rests on a quite narrow interpretation of the implications of a pragmatist theory of democracy. I will then claim in Section 4 that Kitcher’s model is in need of a more radical reading of some specific notions of pragmatist thought that will lead to a better understanding of the tensions between science, politics and the public. First, in Section 5, I will clarify that a pragmatist political theory aims not just to represent or unify the existing political community but to extend that community to new groups and new domains. Key to this is the notion of “publics.” Second, in Section 6 I will explain that pragmatist political theory was formulated in reaction to specific circumstances. Neglecting the historical context of the theory means missing the content of this problem-based approach. One of its focal points was to shift from epistemological problems to practical issues and to cross the divide between thought and action. Crucial to this understanding is the notion of “experience.” The paper ends in Section 7 with conclusions.

2. Well-Ordered Science

“What is the role of the sciences in a democratic society?” With his opening sentence of *Science, Truth, and Democracy* (2001), Philip Kitcher makes clear that his concerns as a philosopher of science are not restricted to questions of a formal kind. In his subsequent work, *Science in a Democratic Society* (2011), he explained that his worries come from two sides. On the one hand, he is concerned about the erosion of scientific authority: “a variety of challenges to particular scientific judgments has fostered a far more ambivalent attitude to the authority of the natural sciences” (2011: 15). On the

other hand, he is concerned about the social embedding of science: "...the tangled relations now evident between Science and social decision making...call for philosophical attention" (Kitcher, 2011: 155). What we urgently need is:

"...a theory of the place of Science in a democratic society - or, if you like, of the ways in which a system of public knowledge should be shaped to promote democratic ideals." (Kitcher, 2011: 26)

In my discussion, I will mainly focus on the ideal of a "well-ordered science" that Kitcher proposed in both books as a theory of this sort. In addition, I will pay special attention to the main difference between the two books: a shift (2011) to the political theory of the American pragmatist philosopher John Dewey (1859-1952).

The starting point is Kitcher's emphasis on "significant truths." Elaborating on a specific treatment of scientific realism and objectivity, Kitcher claims that the status of scientific theories and facts is epistemologically justifiable, but that there are no scientific grounds for pinning down the direction of research programs (2001, Ch. 6; 2011, Ch. 1). Kitcher takes "moral and social values to be intrinsic to the practice of the sciences" (2001: 65) because the organization of every research program demands not only theory-construction on a more general level in order to arrive a certain degree of coherence, but also many practical decisions to be taken and priorities to be set. The course of research programs is for a large part an historically and socially contingent process which is not led systematically by "context-independent goals for inquiry" (2001: 73). The implication is not that "the history of science should be viewed as a sequence of irrational transitions" (2011: 35). Rather, it is that decisions about the course of science "cannot be reduced to simple formalisms" (2011: 36). The conclusion that can be drawn from this is that it is questionable whether the sciences can be hierarchically unified and whether integration within a single unified framework is possible (2001: 71). Of more importance for the discussion here is the conclusion that the agenda for scientific research cannot be formulated solely on scientific grounds. Science cannot set its own agenda scientifically *in a significant way*.

This conclusion creates opportunities for a more comprehensive account of agenda-setting in which the course of scientific inquiry is determined by a variety of parties, interests and considerations. However, Kitcher is reluctant to support a kind of stakeholder democracy of science (e.g. Latour, 2004) in which co-construction is the aim and participation in science by laypeople or the public at large becomes an end in itself. To him, “vulgar democracy is a very bad idea” (2001: 117). Instead, he advocates what he calls a division of epistemic labor (2011: 25) and sketches an ideal of “enlightened democracy” (2001: 133-134) as a middle ground between the pure democratic model of epistemological equality and the expertocratic model of an elite of experts.

At first glance, Kitcher’s proposal is a perfect example of what Latour (1993) has called the “modernist divide,” a separation of tasks and responsibilities between science and politics. Politics is concerned with power and will formation, it is aimed at decision making, and its final task in a democratic society is to attribute responsibility: the governors are accountable to the governed. Science, on the other hand, is concerned with truth, it is aimed at research, and its task is to arrive at rational, independent, more or less objective descriptions and explanations of social and natural phenomena. In the end, this division of labor boils down to a strategy of “purification”: both sides have to be protected against contamination to prevent irrationality and irresponsibility.

However, “well-ordered science” is not an easy scapegoat and the ideas behind it are too intelligent to be accused of naive modernism. Latour’s idea of the “modern constitution” offers a telling but also somehow simplified image of the relationship between science and politics. In fact, it sketches a conceptual image of their relationship in rather static terms and does not offer many clues to understand this relationship under more dynamic conditions, when mutual interaction and actual tensions between the two arise. Moreover, the divide is restricted to only two “powers,” but it is easy to distinguish a few more, such as the media, the law, and economy/industry.

Kitcher focuses on the *interaction* between science and democracy and moves on to ask how the aims of scientific inquiry should be determined. Should we just

leave this to the scientists or is there a role for democratic institutions and citizens as well? His suggestion (2001, Ch. 10; 2011, Ch. 5) is to come to a kind of “well-ordered science.” This proposal aims to combine an epistemologically realistic idea of science with a procedural and deliberative account of democracy that relies heavily on Rawls’ notion of “public reason,” the common reason-giving of citizens in a pluralist society.

Kitcher proposes a three-stage cycle. In the first stage, representatives of groups in society deliberate about their preferences for scientific research. In this process of deliberation, they learn more about the preferences of other groups. This will result in a consensus, an agreement on how to accommodate their differences or a vote about the issues that need to be investigated by academics. This result goes to scientific communities, whose role is to say “how” these issues can be investigated and how probable significant results are. In this second stage, it is important to ask a diverse group of researchers to identify the probability of different scientific ventures succeeding. This would give the decision makers, the representatives, a more balanced view of the possibilities of contemporary science. Just as they decided in stage one on the aims of scientific inquiry, they decide in stage three which projects to fund, based on the additional information given by researchers.

This method forces scientists to discuss explicitly the non-scientific consequences of their work. The current, arbitrary, foundations for deciding what lines of inquiry to follow could be replaced by a more “enlightened democratic” foundation. According to Kitcher, this would not lead to better or more truthful science, but it would be more democratic and this would be an improvement on the current state of “elitism.”

In short, in the first stage, ideal deliberators, seen as representatives of civilians, make a scientifically informed choice as to what policies are worth pursuing. In the second stage, science develops possible scenarios to pursue the policies. In the third stage, the deliberators choose which scenario is most to their liking. The resulting policy would be the perfect combination of democratic preferences and scientific knowledge (Kitcher, 2001: 118-23).

3. A Pragmatist's Account of Democracy

Kitcher's ideal of Well-Ordered Science is instructive for several reasons. First of all, his epistemologically realistic image of science is likely to correspond with the self-image many scientists have of their profession. Second, as a philosopher of science Kitcher explicitly draws attention to the societal position of the sciences. Third, Kitcher tries to connect the position of the sciences to the demands of democratic decision making.

Kitcher emphasized that well-ordered science is an "ideal." However, this ideal resembles many real-life policy practices in which exactly the same order of things can be found. They start with public debate about a new problem, for instance the need for a vaccine. The next step is scientific advice to the government about the possibility of developing a vaccine. Parliamentary discussion then follows. Finally the process ends with a decision and execution of policy programs. So why does Kitcher describe his proposal as an "ideal"? He refrains from an evaluation of pre-existing decision-making processes, which come quite close to his ideal. Instead, his aim seems to be to further polish the theoretical underpinnings of his proposal.

In *Science in a Democratic Society* (2011), Kitcher repeats the main ideas of *Science, Truth, and Democracy* (2001), including his ideal of well-ordered science. One of the main differences between the two books is that in the latter, Kitcher explicitly grounds his concept of democracy on Dewey's thinking. Although Brown (2004) had encouraged Kitcher to take this direction, no reference to that suggestion is made. Neither does Kitcher explain why he considers a more elaborated idea of democracy necessary or in which respects his new ideas differ from his former ones.

Despite these obvious lacunas, his turning to Dewey makes perfect sense. The influence of John Dewey (1859-1952) on the intellectual debate and the development of philosophy in the United States can hardly be overestimated. For over six decades, he played a leading role in both the academic life and in public discussions of his time. He covered a huge variety of then current topics: economic depression, government interventions in markets, the role of the media in forming public opinion, the dangers of communism and fascism, U.S. membership of the *League of Nations*, and U.S. participation in the First and Second World Wars. Key elements of

Dewey's ideas are the emphasis on the political significance of science and technology and the inseparability of democracy and education, the value of democracy as a culture and as a way of life rather than as a set of formal political institutions, his relentless attention to the primacy of the method, both in science and in democracy, and a continued focus on consequences rather than principles.

With respect to re-thinking democracy and the place of the sciences in modern societies, Dewey's work can be regarded as "political theory." The development of a political theory implies the attempt to formulate a coherent network of concepts and abstractions to investigate specific current issues in society (Wolin, 2004: 504). "Political theory" differs in structure from both political philosophy and political science. Where political science focuses on the empirical field of "politics," political theory is engaged with the meaning of "the political," as it also can manifest itself beyond the practice of conventional politics (Mouffe, 2005: 8). In contrast to political philosophy, political theory can be seen as an attempt to conceptualize "the political" by addressing specific political issues instead of taking classical political philosophical issues as a guide.

How much does Kitcher take from this? Is he satisfied with some of Dewey's more modest proposals to make democracy more "intelligent"? Or is he prepared to read Dewey in a more radical way and to see Dewey in opposition to many mainstream ideas of what democracy is all about? If one hopes for the latter, the start is promising. Kitcher regards the voting concept of democracy quite inadequate and states firmly that "the existence of elections and of majority rule is not constitutive of democracy. Often, these serve as the expression of a deeper idea, that of popular control. Nevertheless, they may not even be *expressions* of that idea but *betrayals* of it" [original emphasis] (Kitcher, 2011: 65). Kitcher therefore agrees with Dewey that "democracy is more than a form of government" that it is "primarily a mode of associated living" and that it is concerned with "a way of life" (Kitcher, 2011: 69-70). According to Kitcher, Dewey connected freedom to self-realization and stressed both the need for positive freedom as well as for certain levels of protection (2011: 70). As a consequence, Dewey's idea of democracy is perfectly suitable for addressing what Kitcher considers to be one of the major problems of contemporary

societies, namely “the problem of *unidentifiable oppression* [original emphasis], where the limitations on freedom are either not felt, or, if felt, are difficult to trace to their source because no single agency is involved” (Kitcher, 2011: 78).

To prevent such oppression in general and to mitigate negative consequences of science and technology in particular, he reformulates the question that led him in his previous work to the ideal of well-ordered science. It now reads:

“If contemporary Science, and the public system of knowledge in which it is embedded, is to serve the purposes of citizens of a democratic society, what kinds of investigation should be pursued?”

Soon, however, it turns out that the idea of “investigation” has little to do with the kind of joint problem-solving or co-production of knowledge that has drawn ample attention in, for instance, the fields of Science and Technology Studies and Policy Analysis. Instead, it is to be understood in the more narrow meaning of “responsible decision making” (Kitcher, 2011: 114).

4. Deliberative delusions

Kitcher’s reading of Dewey’s political theory is in line with the widespread view which holds Dewey as a deliberative democrat *avant la lettre* (e.g. Bernstein, 2012). Central to deliberative democracy is the idea that a system of elections to represent citizen’s preferences (“votes”) is not sufficient to arrive at reasonable legitimate grounds for binding collective decisions. Instead, broader support based on shared argumentations (“voices”) is vital to an inclusive model of democracy, which has collective will formation at its center.

This ideal, however, faces some serious constraints. The scale of contemporary democratic nation states, the transnational nature of many issues, the complexity of the problems and the difficulty of arriving at consensus put limits on the feasibility of deliberative processes. In practice, therefore, deliberative processes come not as an alternative but in addition to representational democracy. They are mainly focused

on specific topics and include selections of stakeholders. The same is the case in Kitcher's account.

In addition, current debates question the ethos and authority of science and politics. Hajer (2009) analyzed the different ways in which science's authority is put to the test in media cultures and how the unpredictable dynamics of social media affect political and scientific communities. Brown (2009) described how under such conditions both moral as well as epistemic authority has to be co-produced in mutual interaction. "Who is entitled to speak on which topic and who is granted the authority to do so" and "who is entitled to act on behalf of the people and who is in the legitimate place to do so" are questions which remain to be answered today under conditions very different from those in the past.

The range of people involved in debates and the sometimes highly energetic and emotional nature of controversies in today's media culture have given rise to some criticisms of the ideal and practice of deliberative approaches to democracy. First, deliberative theory tends to neglect inequalities and differences in power, knowledge, and social capital between actors, which put constraints on opportunities to cooperate successfully (Mouffe, 2000: 95). Second, it fails to clarify what kind of framework should be used to decide who are appropriate participants in collective decision-making processes. As a result, it remains unclear what arguments can be used in favor of or against including representatives in the policy-making process (Shapiro, 1996: 233-234). Third, deliberative theory does not offer criteria for deciding what means of persuasion are legitimate in the deliberative process. It remains a question whether storytelling or even emotional outbursts could also play a role in addition to more rational arguments (Nussbaum, 2001). Finally, deliberative theory overestimates the possibility of certain groups with a less developed social position to transform themselves into active citizens (Young, 1997: 60-75).

At this point, one would expect a reaction by Kitcher, because clearly a choice has to be made: either he regards himself as a deliberative democrat and comes up with a defense against these accusations, or he holds that pragmatist political theory purports something quite distinct or at least a specific version of deliberative

democracy and makes this more explicit. Kitcher implicitly chooses the former and replies to these criticisms with mere practical considerations.

However, these criticisms of pragmatist political theory demand a more fundamental reply to the following: does pragmatist political theory essentially consist of a procedural or a substantive account of democracy? Kitcher neglects this question, even though Talisse (2007) formulated an attack that strikes right at the heart of pragmatism. According to him, pragmatism is incompatible with pluralism. His analysis is based on the distinction between “procedural” and “substantive” accounts of democracy, the first being a notion that regards democracy as a process for arriving at collective will formation and decision making in a legitimate and justified way, and the second claiming that democracy demands something “stronger” and “deeper” such as a shared idea of what it means to be a citizen, to have rights, to live in freedom, or even a common agenda to broaden the project of democracy to less empowered groups. Talisse (2007) claims the latter substantive account is incompatible with pluralism and as such with the kind of freedoms defended by Dewey and Kitcher.

“The aim of Deweyan democracy is to reconstruct society according to Dewey’s particular social vision *despite* the reasonable objections of such persons. Therefore the project of reconstructing all of society in the image of Dewey’s particular comprehensive doctrine is oppressive, since it unavoidably involves the coercion of reasonable persons to live within civic and political institutions and structures that are organized around a comprehensive moral vision of human flourishing that they could reasonably reject.” (Talisse, 2007: 46)

This is a severe accusation. But is it correct? Kitcher does not attempt to answer these questions. In the following sections, two objections will be raised which may counter the aforementioned accusations. First, pragmatist political theory aims not just to represent or unify the existing political community but to extend that community to

new groups and new domains. Key to this objection is the notion of “publics” (Section 5). Second, pragmatist political theory was formulated in reaction to specific circumstances. Neglecting the historical context of the theory overlooks the content of this problem-based approach. Key to this objection is the notion of “experience” (Section 6).

5. The coming-into-being of publics

Central to some of the aforementioned accusations is the idea of “membership.” Who are the legitimate stakeholders of a democracy, what is the scope of citizenship? Should all people be involved equally in the creation of public reason or are differences allowed for under specific conditions? Dewey’s answer to these questions is of importance because he shifted attention from democracy as political population management to democracy as a way to broaden the political community and extend it to issue-related groups of people whose interests are more particular than the public goods represented in the polity as a whole. His line of reasoning is helpful in current debates as it can guide us in questions such as whom we should involve in local issues such as drilling for shale gas or vaccinating target groups, when problems of a more general kind have various specific consequences.

Dewey is driven by the question of how to explain to the American people that a proper organization and use of science and technology can contribute to the intellectual and moral development of society and of citizens (Wolin, 2004: 504). According to Russil (2005) Dewey was

“...the first person to fully realize that scientific knowledge and technical expertise would soon be central to all sorts of urgent socio-political issues and that our prevailing ways of coping with this fact – blind assimilation based on unwarranted faith or hurried rejection based on undisciplined scepticism – would distort if not destroy public life in its contribution to key problems and institutions affecting our lives.” (Russill, 2005: 267)

Science, technology and industry determined the new face of the American society at the beginning of the 20th century as it finally pulled into the machine age. Dewey emphasized the self-realization of people. Self-realization can come about when people create relationships with their environment, similar to the way in which Woodrow Wilson talked about The Great Society at that time as “a new era of human relationships.” When Dewey made use of this definition, he emphasized the important role of technology:

“The new era of human relationships in which we live is one marked by mass production for remote markets, by cable and telephone, by cheap printing, by railway and steam navigation. Only geographically did Columbus discover a new world. The actual new world has been generated in the last hundred years. Steam and electricity have done more to alter the conditions under which men associate together than all the agencies which affected human relationships before our time.” (Dewey, 1927: 141)

Scientific and technological developments are not seen by him as a “danger,” but judged on their capacity to make new viable linkages. As he wrote in *Individualism Old and New* (1930):

“Take science (including its application to the machine) for what it is, and we shall begin to envisage it as a potential creator of new values and ends. We shall have an intimation, on a wide and generous scale, of the release, the increased initiative, independence and inventiveness, which science now brings in its own specialized fields to the individual scientist. It will be seen as a means of originality and variation.” (Dewey, 1962: 160-161)

Democracy is, in the famous words of Abraham Lincoln, “the government of the people, by the people, for the people.” The sovereignty of free citizens is thus

reflected in their reconcilability in a political ideal. This phrase aptly illustrates the idea behind the democratic project, but the question is *how* the people can be brought together in this ideal and *what* their connectedness consists of. Today's networks of roads, housing and wiring are not just the cement of society because they make available the facilities along which normal human traffic can take its course. Scientific and technological developments transform the social contexts in which people find themselves. They establish the relationships that bind them again for discussion.

In Dewey's pragmatist political theory as formulated in *The Public and Its Problems* (1927), democracy is neither based on a "collective," nor grounded on the protection of "individual" rights or interests. Instead, he proposes an approach in which the size and scope of political issues should be determined. Dewey is interested in the effects of new problems. The "people," the demos, is not a given, but depends on the issue at stake. Dewey introduced a different view of *who* the demos or the relevant community is in a democracy. Instead of the demos, or the people, he speaks of *the public*. In Dewey's view, politics is not primarily a matter of a community of people who consult one another, but a thing that arises from the fact that private actions and transactions may affect strangers who are not directly involved in those transactions or transaction consequences. In his famous definition, he stated that "the public consists of all those who are affected by the indirect consequences of human action" (Dewey, 1927: 15).

At this point it is important to emphasize that in Dewey's account the distinction between the public and the private does not coincide with that between the social and the individual. A social action has a private character as long as the consequences do not transcend the stakeholders involved. In contrast, an individual act can be of a public nature because the consequences relate to people who were not taken into consideration initially (Dewey, 1927: 12-14). He thus speaks of the public as an effect of unforeseen consequences. Technologies, whether they are the industrial powers of the "machine age" or today's information technologies, connect humans and machines, or (as Latour would say) "humans and nonhumans," and shape associations of people, a "community of the affected" (Marres, 2012: 43). These

publics are not pre-existing groups of people, but come into being as constructed assemblages.

Much has changed since Dewey formulated his theory, but some similarities between then and now remain. Dewey and his contemporaries were bothered about industrialization, migration, the growth of populations in cities, alcoholism, education and the rise of radio networks. Today, people are concerned about genetics, food safety and responses to new infectious diseases, for example. These issues relate to questions of risk, safety, inequality, and morality and put several boundaries to the test, such as between the social and economic order, between health and politics, and between the natural and the artificial.

What distinguishes the present situation from the past? One possible answer is that today's societies are typified by increasingly close relationships between transnational governance, scientific research, technological applications, industry, social order, and geopolitical issues such as climate change, energy security, financial stability, food security, ecological sustainability, and health risks (Beck, 2008). The scale of the problems, the variety of the populations involved, increasing industrial interests and tensions in international political relationships have both broadened and deepened the interdependencies between science, technology, economy and politics. It is precisely under these conditions that the notion of "publics" still proves valuable, by stressing that through these developments new groups of people are shaped and new associations are created between persons who are affected by the consequences of technological risks.

6. The political meaning of experience

The second distinctive feature of pragmatism that is important to stress is the notion of "experience." The dynamics of current debates concerning science and technology are hard to grasp when their emotional and energetic nature is not taken into account. Not because people today are overexcited or because the media focus only on scandals and hypes, but because the very relationship between people's

expectations, political decision making and the course of scientific research and technological innovation is driven by a “political economy of hope” (Rose 2001).

In his essay *On a Certain Blindness in Human Beings* (1899), William James famously described how certain events, such as crossing Brooklyn Ferry, connect people to one another. James himself once wrote that the piece contained “the perception on which my whole individualistic philosophy is based” (Richardson, 2012: 145). In a poetical way, with many references to Robert Louis Stevenson, Wordsworth, Whitman and others, James argued that doing things together unites people and transforms strangers into what is now called a “community of fate.” Experiences blur the boundary between the individual person and the social group.

This notion of “experience” is also central to Dewey’s thought. To Dewey, experience is a path into the world. In *The Need for a Recovery of Philosophy* (1917), he explained that in the following way:

“Experience is primarily a process of undergoing: a process of standing something; of suffering and passion, of affection, in the literal sense of these words. The organism has to endure, to undergo, the consequences of its own actions. ...Undergoing, however, is not mere passivity. The most patient patient is more than a receptor. He is also an agent – a reactor, one trying experiments, one concerned with undergoing in a way which may influence what is still to happen. ...Experience, in other words, is a matter of simultaneous doings and sufferings. Our undergoings are experiments in varying the course of events; our active tryings are trials and tests of ourselves.” (Dewey, 1917: 49)

As such, experience allows for a specific relationship between man and nature, between the inside and the outside world. In *Experience and Nature* (1925), he wrote:

“Experience is not a veil that shuts man off from nature; it is a means of penetrating continually further into the heart of nature.” (Dewey, 1925: 4-5)

In the revival of pragmatist philosophy in the 1980s and 1990s, most notably in the works of Hilary Putnam and Richard Rorty, this notion of experience was concealed behind a somewhat analytic and linguistic interpretation of classical pragmatism. In addition, Putnam and Rorty have put more emphasis on the epistemological aspects of pragmatism than on the political theory. Kloppenberg (1999), for instance, remarked that

“...the early pragmatists emphasized ‘experience,’ whereas some contemporary philosophers and critics who have taken ‘the linguistic turn’ are uneasy with that concept. ...Language was thus crucial for understanding the experience of others, but for James and Dewey language was only one important part of a richer, broader range that included interpersonal, aesthetic, spiritual, religious, and other prelinguistic or nonlinguistic forms of experience.” (Kloppenber, 1999: 86-87)

Recently, some authors have related this notion of experience in classical pragmatist philosophy to its political theory in more explicit and lively ways (Livingston, 2012; Ferguson, 2007). Dewey’s theory offers many clues but James’s is more complicated, one reason being that it remains debatable whether James actually developed anything like a “political theory.” Attempts to reconstruct James’s political theory often take his “radical pluralism” as a starting point. The Great San Francisco Earthquake of April 18, 1906 is a good example of how a single event has very distinct consequences for different people and finally even can be regarded as a collective name for a “whole series of geological slippages, fractures, and vibrations that constitute seismic activity” (Livingston 2012: 1). In *On Some Mental Effects of the Earthquake* (1987), James described how he was thrown face-first from his bed as the

earthquake shook his bedroom “exactly as a terrier shakes a rat” (Livingston 2012: 1). He reported:

“Everybody was excited, but the excitement at first, at any rate, seemed to be almost joyous. Here at last was a real earthquake after so many years of harmless waggle! Above all, there was an irresistible desire to talk about it, and exchange experiences”

To James, the earthquake served as an emblematic example of how experiences both unite people as well as throw them back on themselves. On the one hand, the seismic event was a dreadful nightmare for everybody, leaving three thousand dead and a quarter-million residents homeless and hundreds of thousands in shock. On the other hand, the meaning and impact of the earthquake were different for many people and had varying consequences, so that the experience remained an individualistic affair in the end (Ferguson, 2007: 61). In a passage in Lecture 4, “The One and the Many,” of his *Pragmatism: A New Name for Some Old Ways of Thinking* (1907), James described what he had in mind:

“The world is full of partial stories that run parallel to one another, beginning and ending at odd times. They mutually interlace and interfere at points, but we cannot unify them completely in our minds.” (James, 1907: 71)

Dewey certainly would not disagree, but to him there is more communality in experiences. Moreover, creating common experiences from fragmented events is a task he explicitly attributes to science and philosophy and most of all to democracy itself. Central to this process is his notion of “inquiry.” In *Logic, The Theory of Inquiry* (1938), he explained this idea:

“Inquiry is the controlled or directed transformation of an indeterminate situation into one that is so determinate in its

constituent distinctions and relations as to convert the elements of the original situation into a unified whole.” (Dewey, 1938: 104)

Just to illustrate how much we have derived from Kitcher’s idea of inquiry underlying his ideal of well-ordered science, compare Dewey’s account with the following:

“A society practicing scientific inquiry is well ordered just in case it assigns priorities to lines of investigation through discussions whose conclusions are those that would be reached through deliberation under mutual engagement and which would expose the grounds such deliberation would present.” (Kitcher, 2011: 114)

Kitcher strives to combine Dewey’s broad democratic ideals with a procedural account of democracy aimed at decision making that is simply too narrow to do justice to the full implications of pragmatist political theory. Neglecting the notion of experience impedes a substantive interpretation of democracy which emphasizes the mobilizing role of hopes and expectations because it leaves out non-epistemic aspects of “decision-making procedures” by definition.

7. Conclusions

Kitcher’s “enlightened democracy,” the three-stage process of well-ordered science, takes the place of “science in society” into account and does justice to the idea that the sciences ought not to set their agenda in splendid isolation. However, Kitcher’s idea of democracy is mainly aimed at making legitimate and justifiable decisions. Although he shifts from relying heavily on the political philosophy of Rawls’s in *Science, Truth, and Democracy* (2001) to following Dewey’s political theory in his subsequent work, *Science in a Democratic Society* (2011), his concept of democracy is a deliberative one in the procedural sense. The main criticism which has been brought forward here is that *from a pragmatist account of democracy*, this concept is too

restrictive. Instead, classical pragmatism, most notably the works of James and Dewey, allows for a substantive account of democracy.

Pragmatist political theory in general and Dewey's ideas of democracy in particular have been the subject of much criticism. This varies from the accusation that Dewey's mingling of the procedures of democracy with the methods of science into a thing called "inquiry" leads to a kind of "social engineering" to the fear that this inquiry is easily captured by private interests and is susceptible to the influence of self-assertive, well-organized groups (e.g. Zakaria).

A viable reading of pragmatist political theory demands a stronger elaboration of the notion of "radical pluralism" and the way scientific and technological developments both unite as well as divide people. Key to such an understanding are the notions of "publics" and of "experience." If one agrees with the pragmatist imperative that actions, including thought-acts and speech-acts, are to be judged by their consequences, a pragmatist political theory ought to be sensitive to the idea that it need not give *a priori* justifications for legitimate decision-making processes, but instead should focus on the consequences, i.e. on the *a posteriori* effects of science and technology. This is exactly what Dewey was aiming for with his notion of "the public." The conclusion he arrived at was that unforeseen consequences lead to publics who have to be taken care of democratically.

Kitcher's "enlightened democracy," however, emphasizes the epistemic aspects of decision-making procedures while neglecting public emotions and energies which are not unusual in the "economies of hope" and the "politics of expectations" (Brown 2003; Brown and Michael 2003) that surround scientific and technological promises, as in the case of biofuels, GMOs, shale gas or the development of new therapies and pharmaceutical drugs. Moreover, procedural approaches to democracy tend to neglect the substantive idea of "experience" as a cornerstone for arriving at shared ideas and images. As such, they are blind to the political consequences of social-technological change, for instance the rise of groups of unusual suspects and the shaping of unlikely coalitions such as inhabitants, environmentalists, activists, water corporations and beer breweries in the case of shale gas, which led to "pop-up publics."

Pragmatist political theory differs from other substantive concepts of democracy in that it is not primarily aimed at the formulation of the common good or a binding general will. Geuss (2001) even suggested that perhaps Dewey's democracy "is not at all intended as a concept with application to the political system of a state, but as the ideal of a liberal community which, like ancient direct democracy, lacks state-structures" (Geuss, 2001: 127). However, despite the differences, pragmatist political theory is part of the "deliberative family" which has a bare individualistic notion of representative democracy as its counterpoint.

What then distinguishes a substantive deliberative theory from a procedural one? Pragmatism, I would claim, emphasizes the *transformative nature of reality* and regards both science and democracy as more or less collective enterprises aimed at "inquiry." Issues relating to science and technology will have to be investigated in a continuous iteration between means and ends to arrive at a viable place in society. This ought to result in the identification of publics who deserve special treatment because they are likely to experience the consequences of science, technology and related policy programs in a distinctive way. As such, pragmatist political theory exchanges the general idea of "membership" of deliberative theory for a much more contextualized and partial account, not as a substitution but as a supplement to the existing political community.

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