Deliberative Democracy and Expertise: New Directions for 21st Century Technology Assessment

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ABSTRACT

This dissertation presents the case for a normative vision of the relationship between technical experts and other non-expert members of a democratic citizenry. This vision is grounded in two key insights that have emerged from the field of science and technology studies. First, is the "third wave" science studies movement that identifies problems of expertise as the "pressing intellectual problem of the age." Characterized by the problems of legitimacy and extension, Collins and Evans build the case for the extension of the category of expertise to include those who have the relevant experience but lack relevant accreditation. Alongside this extension of the category of expertise is the extension of those who participate in the framing of techno-scientific issues. This dissertation builds a case for the inclusion of all democratic citizens in the problem framing process. What we are left with from the current "third wave" literature is a multi-tiered prescription for the role of non-experts in public decision-making about science and technology. On the ground floor, when the issue is being framed there is a need to include non-expert stakeholders (in theory, any concerned democratic citizen). Once a framing of the problem has been constructed, there is a need to recognize a larger category of people who count as "expert." Together, these constitute the two most powerful prescriptive elements of expertise developed in the recent science studies literature. The dissertation then explores claims that it is specifically "deliberative" theories of democracy that are best suited to make sense out of this democratization of expertise. After presenting a typology of deliberative theories of democracy that clears up a serious problem of equivocation found in appeals to deliberative democracy in current STS literature, this dissertation argues that only a specific set of deliberative theories of democracy, "discursive" deliberative theories of democracy, are capable of fulfilling the role theories of deliberative democracy are assigned in current STS literature. The dissertation then goes on to suggest how these new insights into the democratization of expertise might affect future instantiations of technology assessment mechanisms (such as the Office of Technology Assessment) in the U.S.

A brief note on methodology

As a trained philosopher (I hold both a BA and an MA in philosophy) I trade in concepts. Thus, the tools I use to ply my trade are necessarily abstract at times. What I hope to supply in this dissertation is a new level of conceptual clarity with regard to the use of theories of deliberative democracy in the STS literature. This fact leads to another level of abstraction. Deliberative democracy is not a description of the way things are. It is an ideal. It is an image of a world ordered in a way that we ought to aspire to. As an STS scholar, I take seriously the peculiarities of context. Indeed, it is precisely the peculiarities of my present context that lead me to be unsatisfied with the current ordering of the world. I do not, however, think that abstract reasoning and methodological idealism have no bearing on the specificities of a particular context. Without such philosophical tools we should have no way of grounding our criticisms in any well-formulated way. Thus, what I offer here is an admittedly abstract and ideal formulation of an image of a world to which I argue we ought to aspire. This image supplies the grounds for criticizing the context-sensitive "real-world" problems defined by their deep immersion in complex networks of local idiosyncrasies.

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Chapter 1: Introduction

Science and Technology Studies (STS) has long concerned itself with the democratization of expertise. Through the descriptive projects of early STS,[1] the case for the role of non-epistemic, "social" values in the practices of science and technology has been made. The STS practitioner now turns her sights to the normative issues which have been thrust into the foreground by these descriptive projects. Having mapped the socio-political dimensions of the production and implementation of science and technology in society, problems of the justice, fairness, and equality of such a mode of production make themselves evident. In an effort to combat these negative implications of the current mode of production of science and technology, many STS practitioners cite a need for *democratic* control over this process. Thus, it is to the literature on democracy theory to which many STS practitioners have turned. In a recent article, Patrick Hamlett makes this connection explicit.[2] He calls for the use of a theory of *deliberative* democracy to understand how the democratization of expertise might work. Hamlett is not alone. Theories of deliberative democracy have emerged from the political philosophy literature as the most promising form of democracy. Indeed, no subject has been more discussed in political theory in the last two decades.[3]

In what follows I will argue for what I think is the best theory of deliberative democracy currently available (with a few suggestions for improvement of my own). I will then concern myself with the problem of technical expertise for theories of deliberative democracy. In so doing, I hope to show that the calls for the use of deliberative theories of democracy are, generally speaking, a good idea, but that more needs to be said about which theory of deliberative democracy we are speaking of

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1   Actor Network Theory, The Strong Programme, Network analysis, etc.
2   Hamlett, Patrick. "Technology Theory and Deliberative Democracy." *Science Technology and Human Values*, Vol. 28, No. 1, Winter 2003, pp. 112 – 140.
3   This is a paraphrasing from page vii in Gutmann and Thompson's *Why Deliberative Democracy*. It is a sentiment echoed in countless prefaces to introduction to democracy theory textbooks.

when we use the phrase "deliberative." While theories of deliberative democracy have benefited from the amount of attention given to them, through this same success they have suffered from a classic problem of overuse; namely, that the phrase has become so common place as to be in danger of losing any real substance. Just what the substance of deliberative democracy is, is a matter of contention among political philosophers. Thus, I will take as my first priority the job of demarcating between theories of deliberative democracy that fulfill the promise of the deliberative turn in political philosophy and those that import the baggage from those theories of democracy from which theories of the deliberative sort were meant to be an improvement.

I will then concern myself with the role of the technical expert in such a theory of democracy. One of the basic tenets of any theory of democracy is that in democratic societies people ought to have a say in the policies that govern their lives. Increasingly, these policies concern scientific and technical matters. This basic fact leads to two important concerns. The first important concern is the quality of the mechanisms for participation in democratic societies. This concern is not particular to policies that concern scientific and technical matters, but is of central importance to any understanding of democracy. Is representation better than direct participation? Is aggregative voting the best way to ensure the liberal principles enshrined in democracy? What of the many problems with majority rule? The promise of theories of deliberative democracy to successfully deal with these classic problems of democracy is one of the primary reasons they have garnered so much support. This is just what the first part of this dissertation will explore. The second important concern that emerges from the basic tenets of democratic control over public policies that deal with science and technology, is the special status of the technical expert.

The problem of the role of expertise presents itself thusly: "If popular reflection on moral

questions is valued as an end in itself by the deliberative democrat, is this direct engagement with moral reflection purchased at the cost of other political goods, such as efficiency and rationality in decision making, and perhaps political stability?"[4] Like military secrets, and proprietary knowledge, technical expertise is often presented in political theory as a special "good" which needs to be afforded a special status – typically granting exemption from the otherwise legitimate subsumption of public policy under democratic control. This is, presumably, out of a laudable effort to value truth in public policy.

This defense of the exemption of technical expertise from democratic control rests on a number of problematic assumptions. The first is the assumption that direct public engagement with the moral dimensions of science and technology is indeed purchased at the cost of whatever truth technical experts may be in possession of. As we will see, one of the key features of deliberative democracy is reciprocity – the requirement that public policies be justified by reasons that are mutually acceptable and publicly accessible to those it stands to affect. The descriptive projects of STS have provided the means to discern, to some extent, what, if any, non-epistemic social norms have bearing on the technical components of an expert's project. Thus, it is possible to ask of the technical expert that they justify those dimensions in terms mutually acceptable on publicly accessible grounds. Notice here, this is not a general requirement for all science. We need not ask of a physicist that she defend string theory. But, we may ask of a telecommunications expert that she justify changing access to public television from analog to digital in the face of clear moral dimensions, like lack of (physical) accessibility and the high costs of replacing out-dated technology. The point is that, unless we are talking about what used to be called "pure research" or have something like the correspondence theory of truth in mind, technical knowledge has moral dimensions that clearly fall under the purview of the

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4   p. 4 Macedo, Stephen. *Deliberative Politics*. (Emphasis added)

general requirement of democratic control.[5]

Thus, the argument against exempting technical experts from democratic control relies on the peculiarities of the theory of deliberative democracy. In fact, it is not hard to see theories of deliberative democracy as providing a defense of technical experts within the democratic decision-making process. In its insistence on publicity, deliberative democracy theories disallow reasons based on inaccessible sources such as religious commitments or an irrational ludditism to inform public policy. Policies based off of these inaccessible sources of authority cannot be mutually justifiable to those who do not share their commitments. Technical experts are in a special position to be able to provide reasons which are accessible. Indeed, (good) science is defined by such a requirement. It is in this way that deliberative democracy theories may allow for a special or privileged place for technical expertise without exempting the technical expert from the democratic requirement of providing mutually justifiable reasons for public policy. Here we preserve the common-sense observation that technical experts know more about some things than the rest of us without sacrificing democratic control. This observation needs to stand alongside the important fact that, again, public policies regarding technical matters are never purely technical. The weighing of risks and benefits of a particular technology clearly requires an understanding of the technical components of the matter, but goes well beyond the technical when weighing potential harm and benefit to the people it stands to affect.[6]

What, then, is deliberative democracy? A useful way of viewing deliberative democracy is as a reaction to the various problems that plague other traditional theories of democracy.

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5 You can put this point a number of ways. Technical expertise is "co-constructed." Technical decisions affect people in morally relevant ways. The technician is one "Actor" amongst others jockeying for power. Etc. I do not think I need to commit myself to any of the descriptive projects these statements employ in order to make the point I am making here.

6 This point is perhaps nowhere clearer than in the use of economists in public policy.

In representative democracies too often representatives are not accountable for their decisions. Once elected, control is theirs. The effect of special interest groups, the pursuit of private interests, and the general problem of being out of touch with the electorate all create serious problems with representative democracy. The main problem here, however, is not inefficient or disingenuous representation, but with the foundations of justification involved. Even if honest politicians existed, the best one could say of a public policy in such a system is that it is justified because it was voted for by the person the majority of my community voted for. This kind of indirect justification leaves many, especially when dealing with a particularly controversial policy, unsatisfied. This dissatisfaction is rooted in the fact that such a system requires no moral justification. The policy is justified via the democratic *procedure* that produced it. This kind of proceduralism is precisely the sort of thing deliberative democracy prevents by insisting that public policies be justifiable in terms that are mutually justifiable and generally accessible to free and equal citizens.

In aggregative theories of democracy in which citizens' preferences are determined (typically through voting – though increasingly there is talk of data sampling and statistical analysis) and then used as justification for public policy there are similar concerns. Here we can think of something like the referendum system in California. This system avoids the problems of indirectness that are found in the representative democratic system, but is still problematic with regard to preference formation. Unfortunately, propaganda works, and in a political climate as polarized as the one the US currently has it is easy to see how people can often be swayed into holding the most outrageous beliefs regarding their own preferences.[7] Here again, the main problem is not merely a practical one (of having an easily

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7   Think, for example, about the 2011 Republican presidential candidate debates when several members of the tea party who, when Ron Paul was asked whether we should let a comatose patient that did not have health insurance die, yelled out, "Yeah!" I am certain that outside of a political climate where helping those that are in desperate need of life-saving aid is seen as a radical leftist socialist agenda, the man who yelled this would recognize the basic moral imperative to

swayed electorate). Rather, it is, again, the foundation of justification involved. Even if we were a

political community comprised solely of thoughtful, reflective citizens with a clear and concise notion

of a well-defined preference, the best one could say of such a policy decided through a simple voting

procedure is that it is justified because it was voted for by the majority of my community. Here again

we see the problem of proceduralism. There are no moral dimensions regarding the substance of the

policy in the justification of the policy. Here we find the problem of majority rule staring us in the

face. A procedure, no matter how perfectly instantiated is incapable of rendering the substance of any

policy justifiable on moral grounds.[8]

One solution to the problem of majority rule found in aggregative theories of democracy is to

allow citizens to only vote for people to represent them (and then to further limit who represents them

to people who are capable of genuine reflection on the best interests of the community). Joseph

Shumpeter is perhaps the most famous advocate of this form of democracy. Of course, as we have

seen, this method of minimizing the effects of majority rule runs into similar problems when it comes

to justification. Thus, there is a recognition in most contemporary theories of democracy of a need to

place limits on the moral substance of public policies in a democracy in an effort to, at the very least,

ensure the basic freedoms that allow democracy to be possible in the first place. These limits most

often come in the form of a constitution.

Constitutionalism, then, is the idea that public policies in a democracy are justified in so far as they

reflect, or at the very least, do not abrogate a set of core liberal values. These values typically include,

but are not limited to, liberty, equality, justice, fairness, etc. Constitutional democracy allows for

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help others (especially when doing is not at any great expense – financial or otherwise).
8   Imagine thoughtful, reflective white people voting according to their preferences with regard to civil rights. We might
     hope that many would recognize the immorality of racism, but the point is, the aggregative model of democracy does not
     require it.

democratic control over public policy, but limits the scope of justifiable policy. In doing so, constituionalism necessarily limits what policies may be democratically chosen. This is a nice way of tidying up the inherent problem of majority rule found in democracy, but is, of course, purchased at the cost of democratic freedom. This tension between democratic ideals and liberal values is a central tension in all modern democracies. It has lead many, such as Chantal Mouffe, to criticize the very idea of liberal democracy as containing an irrevocable paradox.[9]

Problems with the latent liberalism of constitutional democracy are evident in many of the most controversial subjects in American politics. Policies regarding abortion, gay marriage, stem cell research, etc. are essentially withdrawn from the public sphere and, almost always, policy is decided by the judicial branch of the government (which does not pretend to any democratic legitimacy). While we may largely agree with the implementation of liberal values by the court (just about every federal court who has been presented with bans on gay marriage has overturned the law as offending the 14th amendment) this is not what is at issue.[10] The issue is one of democratic justification. Control over such policies is being taken out of the hands of democratic citizens, leaving many public policy decisions with little or no political balance and legitimacy. Thus, in the same way moral justification is ignored by proceduralist theories of democracy, constitutional democracy safeguards moral justification at the cost of democratic/political justification.

Any theory of democracy will, then, have to overcome this basic tension between proceduralist democratic principles and the liberal constitutionalist democratic principles. In essence, it will have to find its way out of Mouffe's "democratic paradox." This is just what theories of deliberative

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9   See *The Democratic Paradox*. Chantal Mouffe. Verso. 2005. The paradox goes something like this: The basic impulse for valuing democracy at all is the idea that people ought to be free to choose the policies that govern their lives. In order to ensure that each citizen has this basic democratic freedom, the very freedom that drives the valuation of democracy in the first place needs to be limited (by liberal constraints) in order to ensure its existence.

10 The court has become increasingly conservative anyway...

democracy aim to do.

With these tensions in mind, we can now look at deliberative democracy, paying special attention to how the theory accommodates these classic dilemmas. For it is, after all, deliberative democracy's claim to be able to do this which has allowed it to amass so much attention. Being aware of the tensions in democratic theory that theories of deliberative democracy are trying to accommodate allows us to see why the theory looks the way it does.

Widely accepted as the most thorough and systematic treatment of a theory of democracy that is explicitly a theory of *deliberative* democracy,[11] Gutmann and Thompson's *Democracy and Disagreement* will serve nicely as a starting point.

Even a preliminary definition of what makes a theory of democracy a "deliberative" theory of democracy is a contested issue. While something like Gutmann and Thompson's general definition of "deliberative democracy" would likely be accepted by everyone, it's generality masks a wide array of interpretive possibilities that allow for very different theories to be captured by the definition.

A form of government in which free and equal citizens (and their representatives), justify decisions in a process in which they give one another reasons that are mutually acceptable and generally accessible, with the aim of reaching conclusions that are binding in the present on all citizens but open to challenge in the future. (page 7, *Why Deliberative Democracy*)

This vision of democracy attempts to reject the dichotomy between proceduralism and constitutionalism by imagining the principles that define the process of deliberation and the principles

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11 See p.5 of Introduction to Macedo's *Deliberative Politics*.

that constitute its content interacting dynamically in an "out-come oriented process."[12] To achieve this,

Gutmann and Thompson argue for three principles that prescribe how deliberation ought to take place.

The first principle is reciprocity. This principle requires those in a deliberation to seek fair terms of

cooperation that others who reasonably disagree with them may accept. It requires those in a

deliberation to reason beyond their narrow self-interest in a way that recognizes a need to justify

positions to others who do not agree. This requires people in a deliberation to frame positions in

certain terms (mutually acceptable) while simultaneously being open to receiving positions of others

framed in like terms. The second and third principles Gutmann and Thompson argue for are publicity

and accountability. These two principles follow naturally from the first principle of reciprocity.

Reciprocity requires the outcome of a deliberation to be (at least temporarily) binding on everyone

based on terms that are mutually acceptable.   In order for these reasons to be mutually acceptable, they

need to be accessible. This is a very broad requirement which simply requires that a reason be publicly

available. Thus, reasons that require religious revelation, in so far as the support for these reasons are

not available to those who do not share the underlying world-view, would not be considered mutually

acceptable, and thus fail the reciprocity requirement. The principle of accountability likewise follows

from the principle of reciprocity in that it requires that public policies (and especially those who

introduce particular policies) provide reasons. This principle is crucial in a representative democracy

where often times people are not directly involved in the deliberative process.

Gutmann and Thompson argue that this concept of deliberative democracy can "respect the

merits of both proceduralism and constitutionalism while avoiding the failings of both."[13]   They argue

that successfully justifying an argument to others who disagree in terms that are mutually acceptable

entails the integration of substantive moral argument into the deliberative process. In this way, neither

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12 p. 27 *Democracy and Disagreement.*
13 p. 50 *Democracy and Disagreement*

the process nor the substance of democratic deliberation has priority. Instead, the two elements of liberal democracy coalesce into an understanding of a liberally substantive deliberation which promises to break the logjam created by the liberal and procedural components of liberal democracy (the democratic paradox).

So goes Gutmann and Thompson's systematic treatment of deliberative democracy. The theory is, of course, contested. There are other authors who work under the umbrella of "deliberative democracy" that provide very different understandings of the relationship between the procedural and constitutionalist strands of democracy theory. Being clear about which theory of deliberative democracy we are talking about is absolutely crucial for arguing how technical experts ought to fit into such a theory. A lot of different, even competing claims can be made about how technical expertise might be understood in the kind of deliberative democracy described by Gutmann and Thompsons's general definition above. The definition provided above is purposefully overly general so as to encompass the various threads within the deliberative democracy literature. Gutmann and Thompson's own version of deliberative democracy (as we have glimpsed above) is far more detailed. The three principles that they endorse are a result of a number of interpretive choices.

Interpretive possibilities with regard to this general definition of deliberative democracy include questions about what constitutes "mutually acceptable" and "generally accessible" reasons (do these reasons have to be independent of any particular parochial interests, or is there some independent standard of "publicity" that needs to be met?). Another area of interpretive flexibility involves the question of justice. Is any outcome of this deliberative practice justified merely because it is a product of a deliberative practice or procedure, or are there independent moral values that limit the content of deliberative proceedings? Different definitions of deliberative democracy can clearly leave us with

very different theories of public engagement. Specific questions about who should be engaged, what perspectives ought to be permitted into the deliberation, what values ought to guide the conduct of those involved, in short, exactly the sort of questions that need to be answered to make sense out of the role of the technical expert in a democracy, remain unanswered by the generic definition. Thus, discerning which theories of deliberative democracy answer the interpretive possibilities above and in which way they answer them is of utmost importance for understanding the relation of a democratic society to technical expertise; for it would seem, depending on which conception of deliberative democracy is a work, the relation could be conceived in a number of different ways.

In what follows I lay out a rough typology that, while glossing over many differences, captures the crux of three distinct approaches to defining "deliberative democracy." These approaches can be seen as embodying competing "interpretations" of Gutmann and Thompson's generic definition. Each type will be explored with greater detail in its turn later in the dissertation.

First, however, it will be helpful to briefly note the history of the term "deliberative democracy." In so far as deliberative democracy emphasizes reason-governed talking as a solution to the ills of social living, it is, of course, not new. Antecedents can be seen as far back as Greece. J.S. Mill and John Dewey were also famous for such an emphasis. However, as we have seen, deliberative democracy hopes to provide a more systematic explanation for how exactly such "talking" can lead to binding and mutually justifiable decisions. Thus, while there are clear predecessors to what we call deliberative democracy today, there are reasons to think that there is a difference in kind, not just degree between these predecessors and what we call "deliberative democracy." I support this conclusion below.

The first use the term "deliberative democracy"[14] is usually attributed to Joseph Bessette in 1980. The term was then picked up and used more widely by other democracy theorists. Importantly, theorists such as John Rawls and Jurgen Habermas who, of course, both already had well-established theories of democracy began to identify themselves a deliberative democrats.[15] While this was happening other theorists were developing critiques to both Rawls and Habermas under the name of "discursive democracy." Despite the co-optation of the term "deliberative democracy" by liberal democratic theorists such as Rawls and his many students[16] by the 1990s theories of deliberative democracy took as one of their targets the many problems with the liberal constitutionalism found in Rawls. Thus, "discursive democracy" was subsumed under the heading of "deliberative democracy." John Dryzek, who coined the term "discursive democracy" has, somewhat grudgingly, admitted that there is no longer a clear way of delineating between "discursive" and "deliberative" approaches to democracy theory.[17] This is primarily a simple matter of usage. The term "deliberative democracy" has taken on a life of its own and has come to be used in the same way the more critical term "discursive democracy" was used.

As theories of deliberative democracy became more hostile to the liberal constitutionalist approaches of Rawls, they likewise took issue with Habermas' conceived proceduralism. Toward the end of the 1990s we had theories of deliberative democracy that were presented as fully formulated, formal systems of democracy that were fully divorced from the Rawlsian and Habermasian traditions. The best example of this is Gutmann and Thompson's *Democracy and Disagreement* (discussed above). As a full theory of democracy, deliberative democracy soon attracted many adherents as well

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14 Bessette, Joseph. 1980.
15 Rawls does so in his *Political Liberalism (1993)*. Habermas does so in his *Between Facts and Norms (1996)*. More on the relevance of their use of the term "deliberative democracy" later. Note for now, though, how late in both philosopher's careers the phrase is adopted.
16 An index of the early work in deliberative democracy reads like the section of Rawls CV where he lists the number of dissertations he has overseen.
17 Dryzek, John S. *Deliberative Democracy and Beyond*. Intro.

as a slew of detractors. Among the detractors were adherents to Rawls' and/or Habermas' understanding of deliberative democracy who took to defending the two against the charges leveled against them by the new theories of deliberative democracy. Other detractors found fault with the new theories of deliberative democracy for very different reasons. Coming from a "radical democracy" tradition, these detractors found fault with the new theories of deliberative democracy for not divorcing itself far enough from the liberal democratic traditions they see themselves separating from (i.e., Rawls and Habermas). Motivated largely by what is now called "identity politics," these detractors find fault in the theory of deliberative democracy in its insistence on the use of "rationality" in determining what constitutes valid communication in a democratic deliberation. Some people are obviously better at presenting reasoned argument than others. The reasons for this inequality in ability is often a result of difference of identity, rather than a difference of an innate capacity to "reason." Those who critique deliberative democracy for these reasons go further in suggesting that the requirement of presenting "mutually justifiable" arguments in terms that are accessible to everyone is essentially a requirement that difference be abstracted away. Any good theory of democracy, say these detractors, needs to pay far more attention to the pluralism and radical difference that exists in our world. Deliberative democracy (even the sort that Gutmann and Thompson endorse (contra Rawls and Habermas – who are far more open to this critique)), it is argued, not only does not pay careful enough attention to these important differences, but attempts to abstract them away via a requirement of mutual justifiability.

From these contestations emerges a theory of deliberative democracy that takes seriously issues of identity politics and responds sincerely to the concerns of the radical democracy theorists. In what follows I provide a more thorough breakdown of these variants of "deliberative democracy." My aim is to provide a typology of sorts in order to be able to be more clear about what we mean when we use the term "deliberative democracy." It is crucial to know whether we are, for example, trying to make

sense out of the role of technical expertise in a Habermasian ideal speech communication or in a deliberative setting governed by reciprocity, publicity, and accountability when we say we want to use deliberative democracy to understand the role of technical expertise. What follows then, is for ease of reference, rather than an attempt at an accurate classification.[18]

The first type of deliberative democracy theory is what I will call the "liberal deliberative democracy." This type of deliberative democracy theory is meant to reference those theories of deliberative democracy that seek to defend a constitutionalist or proceduralist understanding of democracy, In short, Rawls, Habermas, and their adherents. Both Rawls and Habermas make important changes to their theories from their earlier works to encompass the deliberative spirit. Thus, beyond the fact that they both identify themselves as deliberative theorists, there is some substance to the claim their theories of democracy are "deliberative" theories of democracy. This substance will be explored in what follows.

One of the central concerns of deliberative democracy theorists is to combat liberal constitutionalism (the theory that there are a set of central democratic values that need to be maintained and adhered to in all decision-making, most clearly expressed in the judicial system in the US which takes decisions out of the hands of the people (demos) and makes them (ideally) solely on the merit of adherence to constitutional principles). Deliberative democracy, being a part of the more general participatory democracy movement (indeed seen by many as it most eloquent expression), places great value on bringing decision-making procedures down from elite institutions ostensibly divorced from the political and placing the decisions in the hands of those the outcome affects. The reasons for this are plentiful and will be explored in greater detail below. However, this anti-liberal constitutionalism

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18 Though I do, of course, provide good reasons to group these variations of deliberative democracy as I do.

does not translate into an outright rejection of liberalism. While all deliberative democracy theorists will advocate placing decision-making in the hands of democratic citizens, many still require that decision-making procedures as well as decision-making outcomes be bound by some set of independent liberal values. The reasons for this are many and will be explored further below. In this category of deliberative democracy belongs classic approaches to democracy theory that have been given the title "deliberative democracy" theories post hoc (the term "deliberative democracy was not used as an actual moniker until the 1980s). Rawls' "public reason" and Habermas' "ideal speech" are two classic examples of "deliberative" democracy theorists that seek to limit what counts as "democratic" deliberation both in substance and procedure. This often sounds surprising to scholars familiar with Habermas. A great deal of time will be spent on this point below. Habermas' views have famously shifted when it comes to the "deliberative" aspects of his theory of communication. For now, let it suffice that, at the very least, his theory is often identified in the literature as placing such constraints on what counts as legitimate discourse. It should be noted that under the type "liberal deliberative democracy" I include proceduralist democracy theory (the idea that as long as a proper procedure is followed in deliberative discourse, the outcome will be democratically justified) as well as constitutionalist democracy. This is because, like the constitutionalists, proceduralists require a particular procedure on the basis that it will ensure a substantively just/good/liberal outcome.

Rawls' theory of justice focuses on the basic structure of society and proposes principles that each of us would agree to behind a veil of ignorance in the original position. In doing so, Rawls theory appeals to a notion of "public reason" that is to be employed by each individual in society. The principles of justice are universal and binding on everyone since every rational person would agree to them behind the veil of ignorance in the original position. This is the foundation for Rawls' constitutionalism. Decisions regarding public policy must always meet the standards of justice

(discovered through Rawls' hypothetical thought experiment). Rawls may be considered a "deliberative" democrat insofar as his theory provides a neat solution to the problem of majority rule. As we saw above, his emphasis on principles of justice allows him to employ a constitutionalism that limits democratic freedom.

Habermas' theory of communicative rationality is viewed by many as a proceduralist since, Habermas' primary concern is with how communication takes place. Habermas, like other proceduralists imagine the form and content of decisions that result from free and open exchange as having a special status. It is only when people occupy "ideal speech situations" when any genuine communication can be said to have taken place. Habermas is worried here about coercion, intimidation, dishonesty, and all other forms of interference in communication. Thus, for Habermas, it is the principles that guide the process of deliberation that are of utmost importance.

Whether fair or not, Rawls and Habermas have been attacked by many as embodying the problems endemic to liberal democracy. In this section of the dissertation I will try to sort out why this is the case. For now, though, it is enough to note that if when one uses the term "deliberative democracy" one refers to these theories, then they will be missing much of what makes deliberative democracy so attractive in the first place. Namely, its ability to overcome these classic problems of liberal democracy.

The second type of deliberative democracy theory is what I will call "disagreement sensitive deliberative democracy." In this type of deliberative democracy the optimism of liberalism (in thinking that in ideal situations all "rational" people will agree on substantively acceptable democratic outcomes/procedures) is swept aside and room is made for intractable moral disagreement. Indeed, in the hands of Gutmann and Thompson moral disagreement becomes the centerpiece of deliberative

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democracy.

Guttmann and Thompson would see neither Rawls nor Habermas as deliberative democracy theorists due to their respective preoccupations with constitutionalism and proceduralism.[19] Instead, disagreement-sensitive deliberative democracy attempts to overcome the dichotomy between prioritizing the principles that define the process of deliberation and the principles that constitute its content. I have already said a lot about this above. To that discussion we may add: They do so by first noting the source of disagreement in democratic societies. This question is an old one for democracy theory. Thomas Hobbes famously argued that all moral disagreement can be explained and accounted for in terms of conflicting self-interests.[20] David Hume argued that scarcity of resources and limited generosity were to blame for moral disagreement.[21] To these sources of disagreement Gutmann and Thompson add the incompatibility of values and incomplete understanding. Their main argument is that even in ideal circumstances when people's interests are aligned and they are in a position of affluence with an altruistic spirit, disagreement can still occur because of the incompatibility of values and a limited understanding of what is being disagreed about. These two conditions, Guttmann and Thompson argue, are not "obstacles to be overcome on our way to a just society" but rather are basic facts about communal living that "we must learn to live with." This is an important point that separates Guttman and Thompson's version of disagreement-sensitive deliberative democracy from their deliberative predecessors (i.e., the Rawlsians and Habermasians). Where the liberal deliberative democracy theorists imagined ideal situations in which either the substance of the values involved or the procedure by which the issue was to be discussed were agreed upon or somehow "given" by

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19 Though two important factors lead me to include them in the first type of deliberative democracy. First, they are regularly mentioned in the literature as deliberative democracy theorists. Second, many of the more contemporary theorists are easily identified as Rawlsians or Habermasians, having either studied directly underneath them or directly borrowing from them.

20 Hobbes, Thomas. *Leviathan*. ed. MichaelOakeshott (New York: Macmillan, 1962), chap. 4, 39-40.

21 Hume, David. *A Treatise of Human Nature*. Second Edition. (Oxford: Clarendon Press, 1978) book 3, pt. 2, sec 2., pp. 484-501.

democracy theory fiat, Gutmann and Thompson recognize that,

> we do not begin with a common morality, a substantial set of principles or values that we assume we share, and then apply it to decisions and policies. Nor, for that matter do we end up with such a morality. Rather, the principles and values with which we live are provisional, formed and continually revised in the process of making and responding to moral claims in public life.[22]

Thus, for Gutmann and Thompson, the question of what values ought to inform the content or procedure of any deliberation is itself something to be decided upon in a deliberative fashion. It is in this way that disagreement sensitive approaches to deliberative democracy attempt to bypass the dichotomy between the proceduralism and the constitutionalism of deliberative approaches that came before it.

There is another crucial reason that Gutmann and Thompson want to do away with this dichotomy. While constitutionalism concerns itself with justifying the foundation of democratic decision-making and proceduralism attempts to justify the outcome of such decision-making, neither pay much attention to what Gutmann and Thompson call "middle democracy."[23] Middle democracy refers to the actual, real-time, on-the-ground ongoing processes of political decision-making. The processes of middle democracy are riddled with the sources of disagreement mentioned above, most importantly for Gutmann and Thompson: incompatible values and limited understanding. A proper theory of democracy needs to be responsive to how decision-making practices such as deliberation are actually carried out in the real world, not in some idealized public sphere or speech situation.

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22 Gutmann, Amy and Dennis Thompson. *Democracy and Disagreement*. p. 26. 1996. Harvard University Press. Cambridge, MA.
23 p.40 *Democracy and Disagreement*

To achieve this kind of dynamic deliberative style sensitive to the messiness of every-day politics, Gutmann and Thompson lay out three principles by which they argue deliberative democracy ought to operate. Gutmann and Thompson maintain at the core of the process of deliberation is a "disposition to seek mutually justifiable reasons."[24] This disposition, they argue, implies three principles that ought to govern the form and content of deliberation. Gutmann and Thompson hope to apply these principles in an effort to "construct a conception of deliberative democracy that respects the merits of (proceduralism and constitutionalism) while avoiding their failings."[25] The first of these principles, and the one to which Gutmann and Thompson place special emphasis, is reciprocity. Reciprocity is seen as an alternative to other more problematic forms of the regulation of reasons in democracy theory.[26] The relevant advantages of reciprocity over these other forms of regulation of reasons is best demonstrated in this graph:[27]

Principle	*Justification*	*Motive*	*Process*	*Goal*
Prudence	Mutually advantageous	self-interest	bargaining	modus vivendi
Reciprocity	Mutually acceptable	desire to justify to others	deliberation	deliberation agreement/ disagreement
Impartiality	Universally justifiable	altruism	demonstration	comprehensive view

What can be seen from this is the insistence that those who engage in democratic deliberation do so in a particular kind of spirit. A spirit in which cooperation is valued for its own sake, rather than

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24 p. 52 *Democracy and Disagreement*
25 p. 50 *Democracy and Disagreement*
26 This ought to be sounding familiar. Indeed, here lies the seed of the basis for the critique of deliberative democracy from the radical democracy theorists. More below.
27 p. 53 *Democracy and Disagreement*

a reliance on a temporary alignment of interest or an insistence on having special access to the "truth" of the matter (i.e., the one correct moral worldview). Gutmann and Thompson's reliance on this principle of reciprocity is central to their brand of deliberative democracy and will be further explored below.

The other two principles implied by the disposition to seek mutually justifiable reasons at the center of deliberative democracy are publicity and accountability. These two are to be explained by reference to the first principle of reciprocity (hence the priority of reciprocity). In order to ensure the mutual acceptability of reasons, reasons provided for positions in deliberation must be publicly accessible and those make them are to be held accountable to those they represent or to whom the decisions stand to affect.

The third type of deliberative democracy theory is what I will call "discursive deliberative democracy." As Stephen Macedo points out, "Gutmann and Thompson may relax and reformulate, but they do not reject, the notion that public reason has a certain form."[28] Finding fault with this form of psuedo-liberalism, a new literature criticizing deliberative democracy on the basis that even its disagreement sensitive brand does not properly appreciate the "agonism" of democracy-in-action has emerged. This literature, generally referred to as "radical democracy" theory or "difference democracy" theory, has garnered much recent attention. This criticism largely amounts to a charge that the intractability of disagreement stems not from any lack of a common framework, speech condition, or reason (public or otherwise), but, rather, from an irreconcilable difference between identities. Radical democracy borrows from the literature on identity politics to argue that because moral disagreement stems from such deeply-rooted "difference," any attempt to bind participants to an outcome of deliberation (remember the definition of deliberative democracy accepted by all theories of

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[28] p. 7, *Deliberative Politics*

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deliberative democracy offered by Gutmann and Thompson above) will necessarily amount to some people forcing their will on others who do not agree - *justifiably* so! (This is an important note since, of course, no theory of democracy requires everyone to agree to all policies that they are obligated to follow). What we are left with, according the radical democracy theory, is a persistent state of agonism in which not everyone in a democracy will (can?) ever be happy (or, more precisely, in which policies exist that are not justified to everyone, but which, by force of law, they must follow (or at least be affected by, as in the case of technology policy)). This essentially amounts to the charge that deliberative democracy cannot overcome the basic dichotomy found in liberal theories of democracy (i.e., proceduralism vs. constitutionalism) as it thought it could. Instead, theories of deliberative democracy force a kind of hegemonic mode of reasoning on a world in which people communicate in radically different ways. Requiring people to reason in the deliberative fashion prescribed by Gutmann and Thompson amounts to requiring people to abandon their particular identity. Group identity is a long recognized source of power for the underprivileged and historically oppressed. Thus, for some radical theorists, the result of requiring people to reason in this fashion is seen as essentially universalizing the interests of the wealthy and powerful.[29]

Discursive deliberative democracy takes seriously these worries from the radical democracy literature. As the name suggests, though, it still finds value in deliberation. This value comes from an appreciation for how citizens engage in deliberation. Disagreement sensitive theories of deliberative democracy are correct in pointing to the benefits of deliberation including learning, preference formation/change, engagement, etc. These things are crucial to a well-functioning democratic citizenry. Where disagreement sensitive approaches go wrong is in the insistence that the result of these deliberations are somehow justified to the participants simply because deliberation (of any ideal

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29 Sanders, Lynn. See p. 359 in "Against Deliberation." in 1997. *Political Theory*, 25: 347-76. This is a great statement of "Difference Democracy."

kind!) has taken place. The value of deliberative democracy is to be found in the practice of engagement with other citizens (often in citizens engaging themselves). The intractability of moral disagreement and the resultant agonism in democratic deliberation need not, and *ought* not, stop us from doing what we can to come to better appreciate and understand those that differ from us. The point is, and this is something largely ignored by radical democracy theorists, there *are* things we can do, and deliberative democracy suggests just this.

Dryzek, in defending his notion of deliberative democracy against the liberal tendencies found in both the liberal constitutionalist approaches as well as the disagreement-sensitive approaches to deliberative democracy, makes this point explicit. For Dryzek, there is nothing about deliberation that necessarily requires people to strip away their particular experiences and interests in the way difference democrats imagine deliberative democracy theorists require. Dryzek argues that other modes of communication that may be more accommodating to the diversity and pluralism found in the world can still be couched in deliberative democratic terms. Storytelling, testimony, greeting, rhetoric, and argumentation as well are all forms of communication that may properly supply reasons found mutually acceptable. The point here is that Dryzek's discursive democracy (aka deliberative democracy) is capable of allowing for these differences in modes of deliberation.

Having laid out this rough typology of the variants of deliberative democracy theory, I want to turn now to the background of the question of the role of technical expertise in a democracy. Once this background is made clear we will be in a position to be able to ask which of these theories of deliberative democracy can best accommodate the call of the democratization of expertise.

This question has been central to the field of science communication. The technical expert

clearly has more knowledge about a particular subject but in a democracy, as opposed to a technocracy, no more resultant power qua democratic citizen. Of course, with a deeply instilled deference to technical expertise in a democratic citizenry, this basic equality of power need not be something that stops technical experts from having a privileged place in policy-making. With an appropriate level of trust, the technical expert may be legitimately (i.e., democratically) allowed to unilaterally affect policy. To varying degrees, this has been the case in the West since the industrial revolution. That is, until the 1960's.

Stemming from the environmental and antinuclear movements of the 60s and 70s as well as the role of expertise in the Vietnam War, science and technology suffered what has been labeled a "legitimation crisis" in which the foundation of trust in science and technology was shaken. Scientific and technological "advance" was no longer seen by the public as unproblematically good. This meant that should the technical expert feel a particular public policy regarding her area of expertise is better than another, it is up to her to communicate such to the public in an effort to garner public support. This communication took on a particular character and has been described in the science communication literature as the "public understanding of science" movement.

The public understanding of science movement was characterized by a number of important features. First was the deficit model of knowledge. Under this model, the lack of trust underlying the legitimation crisis in science and technology is to be explained by the lack of knowledge on the part of the non-expert. According to the deficit model, it is the lack of proper technical understanding that gives rise to public mistrust of science and technology. This model implicitly utilizes an overly simplified conception of "science" and "technology" as embodying clean finished products resulting from a unified "scientific" process (method). Serving largely as the public relations wing of the

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scientific community,[30] this movement focused on science education as a means of (re)instilling public trust in science and technology. The basic supposition was that once the public properly understood science and technology, they would agree with the experts.[31]

The public understanding of science movement has been heavily critiqued in the science communication literature. There are two primary reasons for this. First, the public understanding of science movement utilizes an image of what science and technology is that is inaccurate and dangerously misleading. Second, is the supposition that any properly understood (technically understood) science or technology will be viewed in the same normative light as the technical expert views it. In response to these problems, an alternative to the public understanding of science movement, dubbed Public Engagement with Science and Technology (PEST) has garnered a lot of attention within science studies. Under this model the concerns of the public are not seen as illegitimate expressions of irrational fears of the unknown and misunderstood. Rather, they are seen as (potentially) legitimate competing perspectives on science and technology. Science and technology can take different forms. There is no Science, but sciences. The unified, cleaned up Science appealed to in the public understanding of science movement presents a misleading image of science. Understanding of science and technology can take many different forms. Technical understanding is but one among other equally legitimate ways of knowing (e.g., practical, nonscientific knowledge, ethical knowledge, political knowledge, etc.). Given this, the PEST model advocates for a bi-lateral communicative scheme in which the technical expert maintains a voice of authority/expertise with regard to the technical components of a controversial scientific or technological issue while non-scientist stakeholders with competing (i.e., different) ways of understanding have a shared place of import in the

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30 p. 164 The Philosophy of Science and Technology Studies

31 Note to myself: I used to say, "once the public came to understand science and technology they would LIKE it." This was an important error, since even the anti-nuclear movement largely utilized the deficit model of knowledge when attempting to teach people about the technical aspects of nuclear energy in an effort to get them to disapprove of it. This is a point stressed in Irwin and Wynne's "Misunderstanding Science." p.2

decision-making process. How exactly this communicative process functions (or ought to function) is a live question and is one of the primary reasons science studies scholars appeal to theories of deliberative democracy with such frequency.

One of the most popular methods of provoking engagement between technical experts and non-expert members of the community has been the consensus conference (also known as "citizen juries"). These consensus conferences are seen as "experiments in deliberative democracy."[32] Typically, a consensus conference has two phases. The first phases involves members of the community, selected for their capacity to represent their community, hearing testimony from technical experts. The second phase involves those members deliberating in an effort to arrive at policy guidelines for legislation governing the issue. This scheme is one of many that has been tried in an effort to combat the problems involved with the public understanding of science movement. It is one of the most popular and the one that most readily embraces the democratic overtones of the critiques of the public understanding of science movement.

These models of engagement coming from the Public Engagement with Science and Technology (PEST) movement have become increasingly popular, especially in Europe where they have widely been embraced by the little OTAs (Office of Technology Assessment); more on this below. However, many have wondered whether they are fulfilling the democratic role they were meant to under the PEST movement. Many have suggested that the consensus conference and the citizens jury have been co-opted and used as mere window dressing for the old Public Understanding of Science movement. Some have wondered whether the structure and the substance of these models of engagement is properly democratic at all.

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32 p.167 Philosophy of Science and Technology Studies.

The fundamental issues here are (1) whether the current methods of public engagement are properly responsive to the two main problems identified with the public understanding of science movement (the problem of the understanding of the nature of science and technology and the problem of interest alignment between technical experts and non-expert citizens) and (2) whether the methods of public engagement are properly democratic. If we are going to call the consensus conferences "experiments on deliberative democracy," we ought to be clear on what we mean by "deliberative democracy." As we have seen, there are a number of competing visions of what constitutes "deliberative democracy." I will take each of these issues in turn.

First, is a more accurate image of science being employed when technical experts engage with non-expert citizens? This is a question that Science and Technology Studies is positioned perfectly to answer. Science in action looks very different from the glossy, final products presented in most textbooks and history books (e.g, positivism). It is instead a messy process riddled with negotiations between people with all the normal social and political entanglements. This is especially the case with new technologies which are typically the concern of these consensus conferences to begin with.

Second, are the current models of public engagement endorsed by the public engagement with science and technology (PEST) movement properly deliberative? Properly democratic?

The main thesis of this dissertation is a simple one: calls for the use of deliberative democracy in technology studies have ignored the important differences between several distinct approaches to deliberation that live under the heading "deliberative democracy" (identified above). This oversight is important since much of what counts as deliberative democracy either ignores what has attracted science studies scholars to the theory in the first place, or, in some cases, stands antithetical to the main

thrust of the attraction. This insight will serve as an explanation for the many problems that are still apparent in the implementation of the new models of engagement discussed above.

In his piece, "Technology Theory and Deliberative Democracy," Patrick Hamlett suggests that theories of deliberative democracy have a clear "affinity" with theories of social constructivism. Hamlett argues that science studies ought to be paying special attention to theories of deliberative democracy because of a shared anti-foundationalism.[33] Deliberative democracy, it is argued, creates space for those who stand to be affected by a particular technology to plan interventions into the conception, implementation, and dispersal of technologies. How this space is to be created is to be determined by the participants themselves. This, Hamlett, argues is just the normative tool science studies has been looking for. The descriptive projects of of the social constructivists (actor network theory (ANT), network/systems theory, the Strong Programme, etc.) demonstrate the socio-technical forces that influence, shape, and define what counts as "sciences" and "technologies." Using these descriptive accounts as part of a normative critique (i.e., is this the way things *should* be, are there a *better* ways to do these things, etc.) has become the focus of many science studies scholars. Finding theories of engagement/ intervention that are properly sensitive to the crucial insights into how sciences and technologies are co-constructed is crucial to this new focus. Deliberative democracy, is said to provide just such a theory.

Is this right? Are theories of deliberative democracy properly sensitive to the constructivist insights so crucial to science studies? The answer to this question clearly depends on which of the three variants of deliberative democracy we are referring to when we ask this question.

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33 p. 134, "Technology Theory and Deliberative Democracy" -ST&HV vol. 28 No. 1, Winter 2003

So what do these differences in theories of deliberative democracy mean for science studies? I'll start to answer this by first asking what science studies might be able to say about democracy theory in general. By studying the practice of science in real time, or in action, a new picture of what "science" is emerges. This picture looks very different from the traditional, positivist picture of science which touts the finished products of science as nuggets of truth that stand independent of the contexts from which they emerge. What we see instead is a messy, disorderly *human* undertaking in which the lines between facts and norms (nature/society), which seem so clear when looking at the finished products of science, are blurred if existent at all. What this means for democracy theory, and political philosophy more generally, is that this domain, the domain of the technical, once shut off from the social sciences is now accessible. This point will be an important one when dealing with the crucial question of expertise. It is in this point that the legitimation of the democratization of expertise may be found. At the very least, it forms a crucial defense against the prima facie claim that technical decisions ought only be made by experts with *technical* expertise.

Now that the domain of the technical is open to political philosophy[34] we cannot forget what opened it in the first place. Importing a theory of democracy which carries along with it the Platonic baggage of idealized forms of rationality (as in the case of the Rawlsian constitutionalist approaches to liberal deliberative democracy) or idealized forms of discourse (as in the case of the Habermasian proceduralist approaches to liberal deliberative democracy) is a methodological inconsistency that would make use of the very kind of "givens" (whether they be factual or normative) that are forbidden when studying science and technology. What can be seen here is that a scholar with the commitments shared by most science studies scholars ought not have something like what I call liberal deliberative democracy in mind when claiming that deliberative democracy can be a useful tool in conceptualizing

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34 Bruno Latour has a great paper that has influenced my thinking on the above. He presented it at the Mullins Lectures at Virginia Tech in 1991. It's called "*The Impact of Science Studies on Political Philosophy*."

the democratization of expertise called for in the literature. In addition, the STS scholar ought to be especially sensitive the critiques leveled against the disagreement-sensitive approaches to deliberative democracy. It was concern over power-relations and inequality that prompted the turn from descriptive projects in STS to normative projects in the first place.

While this certainly does narrow the possibilities for what a theory of deliberative democracy will look like that respects the nature of science in action, it must be admitted that most people have something like Gutmann and Thompson's theory of deliberative democracy in mind when making the call for the kinds of mechanisms of engagement that the public engagement with science and technology (PEST) movement has in mind. It is to this approach, which I dub "disagreement-sensitive deliberative democracy," we will now turn our attention.

Given what we have said about the connections between liberal deliberative democracy theories and the aims of the PEST movement, the advantages of the disagreement-sensitive deliberative democracy are evident. Though, of course, they will hinge on how successfully the disagreement-sensitive theories manage to overcome the dichotomy between constitutionalism and proceduralism. By focusing on middle democracy, disagreement-sensitive approaches deal with democracy in action much in the same way science studies scholar deal with science in action. This is what Hamlett had in mind when he suggested that deliberative democracy and science studies share a methodological anti-foundationalism. Just as science studies scholars take the actual practice of science in real-time to be their object of study, so too does disagreement-sensitive deliberative democracy theory take the actual practice of democratic decision-making to be its object. As Hamlett argues,

> The literature on deliberative practices – both the theoretical deliberative democracy literature and the applied participatory public policy analysis literatures – shows clear affinities to social constructivism.

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Deliberative Theory is clearly constructivist, rather than foundational. Effective deliberation rests on "frames" that are constructed by the participants, through which specific technologies may be assessed and assigned meanings.[35]

This is describing more than an analogical relationship between theories of deliberative democracy and science and technology studies. It is the basis for an argument for methodological consistency. Where science studies rejects notions of context-independent scientific truths, they need to likewise reject context-independent liberal values that guide real-time problems from a God's-eye view.

Disagreement-sensitive deliberative democracy theory's rejection of constitutionalism certainly does result in the ability of participants to deliberate on what values are relevant to the deliberation as well as what process is best suited. In this way, participants clearly have far more room to "construct" the structure and content of the "frames" in which they deliberate. This is far more control than any liberal deliberative democracy theory can allow for. The question is, just how much control is allowed for in Gutmann and Thompson's disagreement-sensitive deliberative democracy, and is it enough to be properly responsive to the agonism of middle democracy? As we saw above, many radical democracy theorists argue that it is not.

The key issue for radical democracy theorists is the concern with the oppressive nature of any idealized form of process or substance in deliberation. This concern is, of course, shared by disagreement-sensitive approaches. The question that now needs to be asked is whether Gutmann and Thompson's regulation of reasons via the principle of reciprocity amounts to an oppression of "difference." Is the requirement of reciprocity, as defined by Gutmann and Thompson, just another way of insisting on deliberative homogeneity, glossing over differences that constitute the very

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35 p. 134, "Technology Theory and Deliberative Democracy" -ST&HV vol. 28 No. 1, Winter 2003

identities of those engaged in deliberation? Is the requirement of reciprocity properly responsive to the existence of these differences of identity in middle democracy? Radical democracy theorists have suggested that they are not.

I have argued that there is in fact merit to the arguments from the radical democracy theorists, but that a theory of deliberative democracy can respond to them. Discursive deliberative democracy incorporates the concerns of the radical democracy theorists and re-imagines the theory of deliberative democracy without any of the problematic liberal tendencies of its predecessors. In many ways, it attempts to cash the checks written by the disagreement-sensitive deliberative democracy theorists. While there is a big difference between liberal deliberative democracy theory and the disagreement-sensitive deliberative democracy theory, the differences between the disagreement-sensitive deliberative democracy theory and discursive deliberative democracy are subtle. The main critique comes down to two things: either disagreement-sensitive deliberative democracy theories genuinely allow for radical, intractable differences and thus do not expect outcomes of deliberative practices to be necessarily justifiable to all involved, or they regulate the types of reasons that are allowed to be used in the deliberative space to screen off potential sources of radical disagreement. In the first case, disagreement-sensitive deliberative democracy theory fails to deliver what it promises: a conclusion, while admittedly open to change that is binding on all parties. In the second case, disagreement-sensitive deliberative democracy theory falls victim to the same problems liberal deliberative democracy theory suffers from. Discursive deliberative democracy is an effort to avoid both of these undesirable consequences.

By widening the scope of what constitutes "deliberation," we can account for oppressed voices while still drawing action-guiding principles from the process of deliberation. Through the process of

deliberation differences are recognized, confronted, and foregrounded. It is here where deliberation

finds its value in a democratic society. While a minority view might not ever recognize reasons

provided in a deliberation as legitimate, their reasons are heard, made real. This is important since, just

as disagreement-sensitive theories of deliberative democracy insist, deliberation is an ongoing process,

tentative, and perennially open to change and reopening. Difference democracy allows us to be aware

of oppressed views and even highlight them in the deliberative process. We can become better able to

recognize when one viewpoint is drowning out another. We can recognize that some are getting the

fuzzy end of the lollipop without claiming that they are being treated well or even justly. Agonism

means more than disagreement in radical democracy. It is an insistence that not everyone in a

democracy will be/can be treated fairly. It is a condition that must be recognized and embraced, not

something to be justified by democratic fiat. Discursive deliberative democracy foregrounds this

process and places it on the deliberative table in an effort to ameliorate it, but never to justify it.

In practice, discursive deliberative democracy might look a lot like Gutmann and Thompson's

disagreement-sensitive deliberative democracy. The processes of deliberation and the construction of

the "frames" in which deliberation takes place by those involved is something to be valued. It is in

how the outcome of deliberation is to be understood where the difference lies.

What would such a theory look like in action? How can such a theory inform the mechanisms

for public engagement with science and technology policy sought after by the public engagement with

science and technology (PEST) movement? The first thing this understanding of deliberative

democracy provides is a tool for critique. The consensus conferences that have occurred have been

organized in conceptually problematic ways. We will examine a number of these in close detail to

demonstrate precisely how this is the case. The second thing this new understanding of deliberative

democracy gives us is a tool for constructing a new model for public engagement.

Through exploring the European experiences with participatory movements, this dissertation will provide key insights into the recent calls for participatory technology assessment in the USA. These calls have long been a part of the Science and Technology Studies literature, but have only recently garnered mainstream political support via a renewed interest in reinstituting the Office of Technology Assessment (OTA) in the US.[36] While the debates surrounding the various European experiences were obviously shaped by their particular local cultural and institutional influences, they were also clearly shaped by two other important factors. First, they were all deliberately based on the model of the OTA. In fact, the first six European Technology Assessment bodies set up were often referred to as "little OTAs."[37] This institutional transfer has been mined extensively for insights into social learning across national boundaries and cultures[38]. It is for this reason that seeing how the OTA model performs in Europe can tell us something about the US. Second, was a massive literature on democracy and technology. In particular, the literature on Deliberative Democracy provided a broad backdrop against which local cultural and institutional understandings of participatory technology assessment were set. The primary focus of this section will be the relationship between the ways in which the deliberative democracy literature was appealed to in specific contexts and the participatory mechanisms that were instituted as a result of the interaction between the deliberative democracy literature and the local cultural and institutional influences. Many places in which deliberative democracy was appealed to succeeded in instituting fairly robust participatory mechanisms, while others succeeded in instituting programs that were little more than window dressing for technocratic

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[36] The two most public are Hilary Clinton's promise to reinstitute the OTA during her 08 presidential campaign and Congressman Holt's 09 article in Wired. Much more will be said about the context of this recent mainstream support below. (http://www.wired.com/wiredscience/2009/04/fromthefields-holt/)

[37] P. 5 Vig and Paschen.

[38] P. 5 Vig and Paschen

approaches to science policy.[39] There are some clear differences in the ways in which deliberative democracy is appealed to in these contexts. Despite the shared theoretical commitments to a 'deliberative democratic' approach, radical differences in the quantity, quality, and expected outcome of public participation persist. It will be shown that an equivocation of at least three distinct types of deliberative democracy is taking place in debates about participatory technology assessment. When these differences are foregrounded, the differences between the quantity, quality, and expected outcome of participatory mechanisms is, at least partially, explained. This insight, will, in turn, provide valuable guidelines for how the new visions of the OTA ought to be couched in terms of democracy theory here in the US. Learning from the past mistakes of the EU with the US OTA model can provide invaluable insight into what forms of democratic participation may work in America and how these approaches can be informed by the form of deliberative democracy that is best suited to articulate the appropriate relationship between technical expert citizens and non-expert citizens in a democracy.

Examining the relationship between technical expert citizens and non-expert citizens is important. From the point of view of the expert who has specialized knowledge and is eager to improve the world with such knowledge, having a firm base of trust on the part of a "public" is crucial. The mechanisms for public engagement that are properly responsive to the discursive deliberative democratic concerns as well as the important insights into the nature of science in action offered by science and technology studies create opportunities for trust to be bestowed; a trust earned through an appropriately democratic relationship between themselves and the non-expert citizen. This relationship requires learning on the parts of both the technical expert and the non-expert. Science literacy remains of utmost importance in an era defined by the neck-breaking speed of technological change. Likewise, an understanding of how scientific and technological change affects other people is required on the part

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[39] More on the metric for what constitutes "robustness" in participatory mechanisms below.

of the technical expert. Given the breadth, the depth, and perhaps most importantly, the speed of such change, face to face deliberation of the sort prescribed by discursive deliberative democracy is the best solution for a society that wishes to remain democratic and not let the momentum of technological change pull it down into a technocratic oligarchy.

What we see, then, is that the normative turn in STS that has identified a need for the democratization of technical expertise needs to be precise when importing theories of deliberative democracy. It will be those theories of deliberative democracy that closely resemble what I have called discursive deliberative democracy that will provide the tools necessary for the STS scholar to make meaningful arguments for change in how technical expertise is handled in democratic fora. The ambiguity of the term "deliberative democracy" explains much of the conceptual confusion found in the literature dealing with practical modes of engagement such as the consensus conferences and the various models for public engagement employed by the "little OTAs." Understanding this will help us envision a more properly democratic process for any new incarnation of the OTA in the US.

Chapter 2: Expertise, Science Studies, and Democracy

This chapter will explore the ways that popular notions of technical expertise are problematized by much of the work done over the last three decades in the social studies of science. Additionally, it will explore the few normative visions of expertise that have been offered by social studies of science scholars in reaction to this problematization. Finally, I will present my own normative vision of the role of the expert in a properly democratic society.

In many ways the issue of technical expertise is the central concern of much of the social studies of science. Whether one defends a kind of pseudo-positivism which advocates for the role of philosophy of science as the under laborer of the sciences, working diligently to neatly package scientific claims into epistemologically and ontologically satisfying claims, or if one sees science as nothing more than ideology that merely reproduces preexisting sociocultural expressions entrapped within a particular contextual framework, both views have direct implications for scientific/technical expertise. As is demonstrated by the many tales that have emerged from the so-called science wars, much of the controversy surrounding these competing visions can be explained by differing prior commitments to the role of science and technology in society (the role of the technical expert) in the first place.

In their piece, "The Third Wave of Science Studies: Studies of Expertise and Experience," H.M. Collins and Robert Evans go as far as to break the historical trajectory of science studies down into three waves defined by their relationship to the question of expertise. The first wave of social studies of science, as described by Collins and Evans, is characterized as a "golden age" before the

problem of expertise raised its head.[40] It is characterized by a positivist commitment to the idea that it

is the job of the social sciences to understand and explain the success of the sciences. Collins and

Evans suggest that with the publication of Kuhn's *Structure of Scientific Revolutions* this wave of

positivism ran into "shallow academic waters[41]." Collins and Evans associate the second wave of the

social studies of science with the social constructivist turn in the social studies of science. Not

surprisingly, given Collins past, they point to the sociology of scientific knowledge (SSK) as one such

variant of this turn. The central theoretical offering of the second wave is, however, more broadly

identified as the demonstration that it is necessary to draw on extra-scientific factors to explain how

many scientific/technical debates obtain closure. Given that this is the central concern of the second

wave we can see that there are a plethora of other theoretical approaches that live comfortably under

the umbrella of this wave. In addition to the other prevalent schools of thought found under the

heading of science and technology studies (i.e., actor network theory (ANT), social construction of

technology (SCOT), and technological systems theory (Thomas Hughes)), Helen Longino's work in

both *The Fate of Knowledge* and *Science as Social Knowledge: Values and Objectivity in Scientific

Inquiry* reflects a strong social turn in the philosophy of science as well.[42] What all of these approaches

share is a reconceptualization of science as a social practice. Science in action, that is, science while it

is being done, before it is cleaned up and presented to other scientists in journals, is a messy human

activity open to many of the same non-epistemic social norms that shape other areas of human

practices.

This shared theoretical consensus about the nature of science and technology has direct

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[40] P. 239 H.M. Collins and Robert Evans. The Third Wave of Science Studies: Studies of Expertise and Experience Social Studies of Science April 2002 32: 235-296.

[41] P. 2239 *Ibid*.

[42] In fact, Longino has an unpublished paper on the subject titled "The Social turn in the Philosophy of Science" which demonstrates the prevalence of this turn in philosophy of science. She presented the paper at one of the Mullins lectures of Virgina Tech…not sure which year. I also managed to track down a copy of it available online at: http://sss.sagepub.com/content/32/2/235.full.pdf+html

implications for how technical expertise is to be properly understood. As we saw in chapter 1, in many ways the problem of the technical expert (demonstrated in the loss of public trust in the technical expert during the birth of the environmental movements, the anti-Vietnam movements, and the anti-nuclear movements) is part and parcel of what prompted the move away from the positivist images of science and technology that characterized the second wave in the first place. With a thorough critique of this image in hand, social studies of science is able to explain the legitimation crisis for the technical expert that took place in the 60s and 70s. It is no accident that Kuhn's SSR (published in 1962) is cited so often as an instigator of the social constructivism of the second wave. Despite the fact that Kuhn was more or less a positivist himself who had written SSR with the intention that it be included in the *International Encyclopedia of Unified Science*, the timing of its publication (during the beginnings of the legitimation crisis for the technical expert) allowed the implications of his view on incommensurability and the sharp breaks between scientific paradigms to be easily adapted into a sharp critique of the positivist project.

In many ways the social studies of science has been stuck in this flight pattern.   The legitimation crisis for the technical expert is now thoroughly mapped. The literature is overflowing with case studies on how non-technical, social norms can and do influence science and technology, especially in the public policy arena. The problem, however, is that the very tools used by many STS scholars to critique technical expertise now make it very hard to understand what, if anything, constitutes legitimate expert knowledge. For some social scientists this implication is not problematic. These scholars may bite the bullet and accept the claim that technical experts have no special claim to knowledge. For the rest of us who are convinced that, despite fuzzy boundaries, there are some clear and important differences between science and nonscience, this creates a pressing intellectual problem. The hope is that believing that science and technology are human activities that utilize nontechnical

values from the social context in which they are embedded and that technical experts have access to special knowledge that is a valuable guide to public policy does not require Orwellian doublethink.

This issue, then, is what characterizes the third wave of the social studies of science. For Collins and Evans it not only characterizes this third wave, but also captures a more universal issue.

> One of the most important contributions of the sociology of scientific knowledge (SSK) has been to make it much harder to make the claim: 'Trust scientists because they have special access to the truth'. Our question is: 'If it is no longer clear that scientists and technologists have special access to the truth, why should their advice be especially valued?' This, we think, is the pressing intellectual problem of the age.[43]

Collins and Evans are connecting the problem of expertise we have discussed here with a larger issue of expertise in democracy. As we saw in Chapter 1, even if one maintains a positivist vision of science and technology which trusts that technical experts are never in error there is still a deep problem with technical expertise and democracy. The notion that public policy ought to be based on the best expert testimony is technocratic, not democratic. We have explored this issue in chapter 1. What I want to point out here is how much this issue is exacerbated by the problem of legitimacy so well articulated in the second wave of the social studies of science. If technical expertise and democracy are already uncomfortable bed-fellows, the insistence that the technical expert is not in possession of timeless truths that stand independent of social norms is not going to help. This is a problem because technical experts do and should influence public policy about science and technology (though we are, of course, going to see that they ought not do so exclusively) in a society that aims to be democratic.

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[43] P. 236 Ibid.

What follows from these observations is recognition of the need for a normative theory of technical expertise. While the second wave of the social studies of science concerns itself with the problem of legitimacy, the third wave concerns itself with what Collins and Evans call the problem of extension.[44] The problem of extension arises out of the idea that the solution to the problem of legitimacy for the technical expert is a widening of the category of technical expertise to include many people with knowledge that are now seen as non-experts. The question of how far to widen the category of expertise then becomes pressing. We are left with the problem of extension. How far should participation in technical decision-making be extended? There is a lot to unpack here, so let's take each component in turn.

First, how is the problem of legitimacy for the technical expert supposed to be solved by widening the category of expertise? Through a number of influential case studies (we will briefly explore these below) it has been demonstrated that people with authentic but unrecognized expertise are left out of technical decision-making routinely due to the rigid boundaries between expert and non-expert constructed by the relevant institutions of science and technology.[45] This, in turn, has demonstrated how nontechnical social norms can affect technical decision-making. In many cases, the differences of perspective between those officially accredited with possessing expertise and those seen as laypersons can translate into very different technical decisions that reflect different socio-political commitments.

Brian Wynne's oft-cited case study of the Cumbrian sheep farmers[46] as well as Steven Epstein's

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[44] The extensive use of Collins and Evans "waves" and terminology is, I hope, justified by the fact that the paper I am referencing here has become very influential. It is, as of January 2012, despite being published over 10 years ago, ranked 2nd in the most cited articles list from the *Social Studies of Science*. http://sss.sagepub.com/reports/most-cited

[45] I do not wish to reify science and technology as institutions. I only mean to reference the current pathways to accreditation/recognition as an expert. This references science and technology not as institutions themselves, but the actual, current institutions that regularly certify people as scientific/technical experts. The basic fact that having a certain kind of knowledge is (currently) necessary but not sufficient to be recognized as an expert seems to point to the social construction of 'expertise'. (This is a response to a worry Joe had about me reifying science and technology)

[46] Wynne, Brian. "Misunderstood Misunderstanding: Social Identities and Public Uptake of Science." *Public*

case study of AIDS patients in San Francisco[47] (also very often cited) are both examples of the sort of cases Collins and Evans have in mind when they argue for the expansion of the category of expert.

Brian Wynne's piece describes the interactions between Cumbrian sheep farmers and government scientists in the wake of the fallout from Chernobyl. Over and over again the expertise accrued through generations of experience with sheep farming held by the sheep farmers was undervalued or outright ignored by government scientists whose main concern was the public image of safety after Chernobyl. In one instance, sheep farmers were told by the government scientists to stop feeding the sheep the local grass (which was thought to be the source of radiation in the sheep) and feed them straw imported from elsewhere. The sheep farms laughed at this suggestion since it implied a gross lack of familiarity with how sheep behave. One cannot simply ask a Cumbrian sheep to stay in one place and eat straw. Another classic example of the sheep farmer's expertise being ignored was the assumption on the part of the government scientists that it was not much of an imposition on the sheep farmers to simply wait to sell their sheep until radiation levels fell off. This again, demonstrated a gross lack of understanding of how and when a sheep is ready to be sold. Given the shared goal of the sheep farmers and the government scientists to sell the sheep as safely as possible as soon as possible (in order to allay public concern about the Chernobyl fallout more generally), the lack of respect for the knowledge about sheep farming held by the Cumbrian farmers displayed by the government scientists displays the power of the distinction between expert and layperson.

Steven Epstein's piece tells a similar story about AIDS patients who, after becoming fed up with how clinical trials are run, took matters into their own hands and, after acquiring the requisite technical knowledge, began running their own community-based drug trials. By gaining knowledge through

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Understanding of Science 1992 1: 281

[47] Epstein, Steven. "The Construction of Lay Expertise: AIDS Activism and the Forging of Credibility in the Reform of Clinical Trials," Science, Technology, and Human Values, Vol. 20, No. 4 (Autumn 1995), 408-37.

experience, these AIDS activists were able to effectively intervene in the technical matters of their own treatment.

The stories Wynne and Epstein tell here have become classic examples of "lay expertise." However, Collins and Evans take exception to this oxymoronic phrase. Noting these cases, Collins and Evans lay out three levels of experience-based expertise.[48] In fact, Collins and Evans advocate for a new field in STS: Studies of Expertise and Experience (SEE). This hasn't caught on to my knowledge. I mention it here only to point out the emphasis Collins and Evans put on various forms of experience as the metric for expertise. The levels of experience identified by Collins and Evans are below. They are informed by Collins and Evans own experiences as sociologists of science. They are based largely on the idea that when performing fieldwork in the social studies of science one needs some level of familiarity with the technical practices they are observing. What degree of familiarity is necessary is, of course, a contentious issue within the social sciences. Many philosophers of science I know would insist on a very high level of knowledge about the technical practices before anything of philosophical value might be said about the practice. On the other hand, in fields such as anthropology or ethnography, too much familiarity with the field can often be viewed as a source of bias that will prevent the ethnographer from being objective. At any rate, below are the various levels of expertise that Collins and Evans identify. They are based largely on the question of which level is necessary to perform valuable work in the social studies of science, but are then used by Collins and Evans to say something far more general about the concept of expertise itself.

Levels of Expertise Vis a vis Sociologist's Fieldwork-[49]

No Expertise: That is the degree of expertise with which the fieldworker sets out; it is insufficient to conduct a

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[49] P. 254 H.M. Collins and Robert Evans. The Third Wave of Science Studies: Studies of Expertise and Experience Social Studies of Science April 2002 32: 235-296.

sociological analysis or do quasi-participatory fieldwork.

Interactional Expertise: This means enough expertise to interact interestingly with participants and carry out a sociological analysis.

Contributory Expertise: This means enough expertise to contribute to the science of the field being analyzed.

Given these various levels of expertise, Collins and Evans want to read the Wynne case not as a case of lay expertise (someone who is not an expert who has a lot of knowledge), but as cases of two groups of contributory experts in different fields (as it were) not properly communicating. In Epstein's case study, Collins and Evans explain the success of the AIDS activists in terms of their ability to gain contributory expertise. Thus, despite the phrase used in the title of Epstein's paper ("The Construction of Lay Expertise: AIDS Activism and the Forging of Credibility in the Reform of Clinical Trials"), the AIDS activists are not to be seen as simple laypersons who have managed to mimic expertise through the acquisition of information, but, rather, as people who have managed to transform themselves into contributory experts. Contributory expertise, then, is the essential feature of what makes an expert an expert. It is a necessary and sufficient quality, for Collins and Evans.

This, then, is what allows Collins and Evans to supply a prescriptive account of expertise that expands the category to include all people with the kind of experience that allows them to contribute to a field of science regardless of institutional affiliation or accreditation. While expanding the category of expertise to include "lay expertise," Collins and Evans model also provides a clear line of demarcation between the expert and non-expert.[50] Recall that, according to Collins and Evans the third wave of science studies is characterized by the 'problem of extension'. Here we have their contribution to the problem. How far ought participation in technical decision-making extend? To the point of contributory expertise as garnered through experience, says Collins and Evans.

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[50] A conceptually clear line, anyway. Determining precisely what counts as "contributing to a field of science" will be, of course, difficult in practice.

Collins and Evans are quite unashamed of the solidity of this boundary:

> It seems, then, important to retain the notion, even if it is an idealized one, of a core-set community in which expertise is used to adjudicate between competing knowledge-claims and to determine content of knowledge. The wider society still has a role to play in forming a view about the socially acceptable use of such technology and what to do while such knowledge remains contested, but this contribution lies in the political sphere. Lay people as lay people, however, have nothing to contribute to the scientific and technical content of debate. Even specific sets of lay people, as demarcated by gender or colour, have special contribution to make to science and technology only where it can first be shown that their special experience has bearing on the scientific and technical matters in dispute.[51]

I want to note here that Collins and Evans leave a lot of room here for the role of the non-expert in the public policy realm. Thus, the strict demarcation between expert and non-expert (which is, of course, far less than strict than anything close to what we use today) while certainly influencing the form of public participation model in science and technology policy issues, does not serve as an argument against such participation. It still allows for people to have direct participation in the science and technology policy process, just only with those things that are political and not technical. If this sounds a lot like the kind of thing people used to think about the relationship between science, technology, and society in the 'golden age' of the first wave as described by Collins and Evans themselves, you are not alone. However, Collins and Evans want to remind us that what they now mean as 'technical expert' is a far more inclusive category than anything that was imagined in the first wave. In addition, they suggest that "setting a limit on the extension of expertise will soothe the fears of those who resist any widening of participation, on the grounds that it will open the floodgates of unreason."[52]

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[51] P. 281. H.M. Collins and Robert Evans. The Third Wave of Science Studies: Studies of Expertise and Experience Social Studies of Science April 2002 32: 235-296.

[52] P. 237, *Ibid*.

Under this model, the techno-scientific components of a public issue are determined by a core set of experts. The social uses of these techno-scientific issues are then left to the public to decide. Public participation in technical decision-making is expanded under this model in so far as there are members of the public who possess a relevant kind of experience that constitutes contributory expertise. This may allow some members of the public to participate in both the techno-scientific components of a public issue as well as the public use issues. This model, then will have a relatively specific set of prescriptions for any model of public engagement in science and technology policy that will expand and limit the role of the public in various phases of the decision-making process. I want to simply note these here for now. They will be important when we turn our sights to the various models of public engagement that are compatible with deliberative democracy in chapter 4.

The question of how far to expand public participation in technical decision-making (the problem of extension) is only a live question as long as we accept the basic premise that characterizes second wave social studies of science (the problem of legitimacy is best solved by expanding the core of certified experts). The problem of legitimacy is characterized by a lack of trust in technical experts. The proposed solution is to expand the core set of experts to allow for some legitimate public concern, heretofore ignored by the core set of technical experts, to be addressed within the core set of experts. This, then, creates a new problem of just how far to expand the criteria of what ought to constitute the core set of experts. This, again, is the problem of extension that characterizes the third wave of the social studies of science.

Thus, one direct way of critiquing a proposed solution to the problem of extension is to ask how well it addresses the problem of legitimacy. A solution to the problem of extension is only as good as

its ability to address the concerns from the problem of legitimacy. If, for example, one's proposed

solution to the problem of extension is not inclusive enough and serves only to alter existing models of

legitimate technical expertise slightly, then we might expect that it would not solve many of the

problems found in the problem of legitimacy. Since, the motivating force behind the problem of

extension requires a commitment to the problem of legitimacy, any proposed solution to the problem of

extension needs to be judged against how well it answers the problems presented in the problem of

legitimacy.

This is the backbone to the primary critique of Collins' and Evans' model for the

expansion of technical expertise. As Wynne points out, "Their implicit assumption is that the 'problem

of legitimacy' for science is rooted in the way that people with authentic but unrecognized expertise are

denied access to expert deliberations about such (propositional) questions as those stated earlier (for

example, "is UK beef safe?")."[53] As most people familiar with science communication literature will

tell you, public reactions to science and technology are not fully explained by appeals to who knows

what about the technical components of the issue. That is, the public reaction to a new science or

technology is not fully explained by an appeal to the differences between what technical facts that

public is aware of and what technical facts technical experts are aware of. I have addressed this in

chapter one already, but it may be useful to review the point here.

The deficit model of the public understanding of science suggests that negative public reactions

to science and technology can be explained by the lack of scientific or technical knowledge on the part

of the public. To know science and technology is to love science and technology, according to this

model. However, a bounty of case studies have shown that many public reactions to science and

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[53] P. 403. Brian Wynne. "Seasick on the Third Wave? Subverting the Hegemony of Propositionalism: Response to Collins & Evans" (2002) Social Studies of Science June 2003 33: 401-417.

technology are better understood as framing issues.[54] That is, often times, people do not have a

negative reaction to science and technology because of a lack of knowledge or misunderstanding of the

technical issues involved. Rather, what people may take issue with is how the issue is framed in the

first place. Rejecting technical expert's automatic authority in framing what the issues are is radically

different from rejecting technical experts as a key resource in public issues.   Public understanding of

science issues are typically framed in the latter terms (the public's irrational rejection of scientific fact),

while they are often better understood as legitimate complaints that are justified by the former terms (of

a disagreement of how the problem is framed).

     Some classic examples of this include framing problems in nuclear energy debates, genetically

modified organisms (GMOs),[55] and oil drilling. More often than not, Nuclear energy debates are

framed in terms of local health concerns. Technical experts are furnished to support claims of safety.

Someone who still does not support nuclear power in the face of such expert testimony may be thought

of as ignorant or anti-technology. However, it is often the case that people who are against nuclear

power are against it for very different reasons. Many people might view the problem of a particular

nuclear power plant in larger, harder to technically define terms. For example, one might not

necessarily be opposed to one nuclear power plant, but have serious issues with the consequences of

having a large network of nuclear power plants spread throughout their society. Issues of nuclear

waste, the creation of a plutonium market, security concerns, and others all become more apparent

when one views the adoption of one nuclear power plant as a possible first step toward the adoption of

a nuclear power network. Thus, it is possible, indeed it happens often, for someone to have a legitimate

complaint about how a techno-scientific issue is framed while being in total agreement about the

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[54] One of the most well known edited collections of these case studies is: Misunderstanding Science? The Public
    Reconstruction of Science and Technology. Edited by Alan Irwin and Brian Wynne. 1996. Cambridge University
    Press.
[55] A great piece on GMOs and framing issues that I use often in my Intro to STS courses is David Dickson's "Science and
    its Public: The Need for a 'Third Way'. Social Studies of Science. 30/6 (December 2000) 917-23.

technical facts presented by a technical expert. This difference in framing the problem is not a

technical matter that falls to the technical expert to decide. The issue is very much one of public

meaning. What is the problem to which we ought to bring technical expertise to decide? This is a

question about science and technology policy that comes before any consideration of who constitutes a

legitimate expert.

If what we have said here is right, and much of the crisis of legitimacy can be explained in

terms of an issue of framing, then Collins' and Evans' solution to the problem of extension does not

properly address the real concerns that defined the problem of legitimacy. While what Collins' and

Evans' have said about the expansion of legitimate contributory expertise is a welcomed critique of the

narrowness of the current definition of technical expertise, this expansion alone does very little to

address the underlying causes of the problem of legitimacy. Whereas Collins and Evans saw the

underlying problem of legitimacy as one rooted in the way that people with authentic but unrecognized

expertise are denied access to expert deliberations, we can now see that the problem of legitimacy is

also to be understood as an issue of problem-framing and public meaning.[56] Wynne, again, sums it up

nicely, "…the problem of public legitimacy for modern science is more about its presumptive

performance of alien public meanings and civic identities than just about exclusion of legitimate actors

from propositional debates."[57] This being the case, any solution to the problem of extension will need

to account for these features of the problem of legitimacy.

If we recognize that prior to issues of how experts and non-experts ought to relate to one

another there are questions of how to frame a technical issue properly, we are faced with an entirely

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[56] Note the presence of the word "also" here. I will say more about this below.

[57] P. 409   "Seasick on the Third Wave? Subverting the Hegemony of Propositionalism: Response to Collins & Evans" (2002) Social Studies of Science June 2003 33: 401-417.

new issue for the problem of extension. Who now ought to decide what the salient issues, questions, problems are about a particular techno-scientific issue? Is there anything about an engineer or scientist's training that ought to grant him or her authority to decide such questions? Here, people like Brian Wynne,[58] Sheila Jasanoff,[59] Alan Irwin,[60] Richard Sclove,[61] Steven Yearley,[62] et al. have done a lot of work to show that such training ought not allow those who have the training such exclusive authority. Instead, questions of what constitute legitimate problem framings are best thought of as issues of public meaning, or civic epistemology. Wynne again,

> If we do not realize that there is an issue about science's de facto role in modern society as assumed agent of the meaning of public issues (as if these meanings were objective, given and universal, for example as 'risk issues'), then we are left thinking that the issues are indeed 'technical decision-making' only (with no wider human agency in question in their prior framing), with correspondingly defined core-sets and corresponding 'properly' marginal social and intellectual hinterlands.[63]

Wynne gets a lot of yardage out of the concept of public meaning. The notion that socio-technical policy issues are defined by problem framings as well as discussions of the technical components of the issue is a crucial reconceptualization of the problem of the public understanding of science and technology. More than once Wynne suggests that Jasanoff's notion of civic epistemology is a useful way to conceptualizing public meaning.[64]

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[58] Ibid.

[59] See Designs on Nature: Science and Democracy in Europe and the United States. 2005. Princeton University Press. See especially CH 10.

[60] Misunderstanding Science? The Public Reconstruction of Science and Technology. Edited by Alan Irwin and Brian Wynne. 1996. Cambridge University Press.

[61] Sclove, Richard. Democracy and Technology1995. Guilford Press.

[62] See CH 8 in Misunderstanding Science? The Public Reconstruction of Science and Technology. Edited by Alan Irwin and Brian Wynne. 1996. Cambridge University Press.

[63] P. 410 "Seasick on the Third Wave? Subverting the Hegemony of Propositionalism: Response to Collins & Evans" (2002) Social Studies of Science June 2003 33: 401-417.

[64] He mentions civic epistemology throughout the piece and specifically credits Jasanoff with the concept in footnote 2.

Jasanoff defines 'civic epistemology' as culturally specific, historically and politically grounded, public knowledge-ways (p. 249 in *Designs on Nature*). These 'knowledge-ways' help to explain how and why people form knowledge about scientific and technological public policy issues. Jasanoff presents 'civic epistemology' as an alternative explanation to public understanding of science and technology (the PUST movement discussed in chapter 1). It is another helpful model for understanding how the deficit model found within the PUST movement falls short in fully explaining controversy in techno-scientific public policy. Instead of a simple lack of knowledge or misunderstanding on the part of the public, public dissatisfaction with science and technology policies needs to be explained by reference to the complex of 'knowledge pathways' found within that society. These public knowledge pathways are shaped and maintained by specific, culturally dependent histories that inform the relationship the public has with science and technology (and the technical experts that serve as their spokesmen). The diversity of these pathways is demonstrated below. Jasanoff's *Designs on Nature* provides a wonderful comparative analysis of science and technology policy issues in the West.

On page 259 she presents this graph of the six dimensions of civic epistemologies (1) the dominant participatory styles of public knowledge-making; (2) the methods of ensuring accountability; (3) the practices of public demonstration; (4) the preferred registers of objectivity; (5) the accepted bases of expertise; and (6) the visibility of expert bodies:

United States	Britain	Germany
Contentious	*Communitarian*	*Consensus-seeking*
1 Pluralist, interest-based	Embodied, service-based	Corporatist, institution-based
2 Assumptions of distrust; Legal	Assumptions of trust; Relational	Assumption of trust; Role-based
3 Sociotechnical experiments	Empirical science	Expert rationality
4 Formal, numerical, reasoned	Consultative, negotiated	Negotiated, reasoned
5 Professional skills	Experience	Training, skills, experience
6 Transparent	Variable	Nontransparent

I provide this graph here in the hopes that it provides a glimpse of the kind of considerations that need to be taken into account when considering how 'public meaning' of scientific and technological policy issues might be constructed. It should be stressed that these are not sources of irrational beliefs regarding science and technology. They are, instead, sources for framing scientific and technological problems.   Again, this question of framing comes before the issue of which technical facts to believe presents itself.

For our purposes we may see attempts to expand the set of people who get to decide the framing of the techno-scientific issue from scientists and technicians to society writ large as an alternative solution to the problem of extension given our new understanding of the problem of legitimacy. To the extent that public meanings and the imposition of problematic versions of these by scientists and technicians is the issue, the proper participants in deciding what constitutes a legitimate techno-scientific problem framing are in principle every democratic citizen who stands to be affected by the issue, not just people qualified by having a specific sort of experience-based knowledge, as Collins' and Evans' model would have it.

Thus, where Collins' and Evans' vision of the category of technical expert takes nothing away

(in terms of authority)[65] from the existing category of technical experts, this new understanding of technical expertise wrests from the technical expert the authority to frame problems and places it in the hands of all democratic citizens.

Unlike, Collins' and Evans' model, this new understanding of the solution to the problem of extension does not readily lend itself to a clear line of demarcation between what counts as a legitimate framing of a techno-scientific issue and an illegitimate framing. While its emphasis on the need to allow for public participation in the framing of these issues is most welcomed, it does not place any limits on the content of these framings. Collins and Evans were, almost certainly, correct in worrying that not setting a limit on the extension of expertise will flame the fears of those who resist any widening of participation, on the grounds that it will open the floodgates of unreason. Indeed, the problem of extension is precisely the problem of how far to expand public participation in technical decision-making. What answer might we be able to provide to those who might share these fears under this new vision of how best to solve the problem of extension?

The answer, I will argue, lies in how we understand the practical models for how public participation ought to take place. The constructivism allowed in discursive deliberative democracy in framing issues deliberatively can account for the open-endedness of the opening up of framing issues to public deliberation. Theories of deliberative democracy can also allow for a number of clear constraints on what can be allowed in the public sphere. These democratic limitations on the content of public deliberation may serve as an appropriate guide for how to limit public discussions of techno-scientific problem framing. I have already briefly suggested how these limitations work in CH1. The next chapter will explore the three kinds of deliberative democracy in more detail. We will then be in a

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[65] I suppose it does take away authority from those who currently count as technical experts in so far as it demands that those who currently are accredited as technical experts are asked to share that authority with others who are contributory experts but not accredited.

better position to say something specific about how they apply to these normative visions for public participation in technical decision-making.

What we see here in the two most popular normative visions of the relationship between the layperson and the expert in the STS literature is an insistence that any public policy that hopes to be justified in the face of the problem of legitimation for the expert needs to take into account at least two things. First, it needs to have a process for discerning who has the relevant expertise in the field of which the public policy applies in terms of experience (not solely institutional affiliation). Second, it needs to open up the process of problem framing to the general public. These two insights will provide us with the tools necessary to evaluate how responsive models of public engagement are to the problems of legitimacy and extension that while in addition to defining the last 30 years of social studies of science may indeed define the very issue of our age.

Chapter 3: The Deliberative Democracies

This chapter will explain and defend the three categories of deliberative democracy theory identified in chapter one. It will be demonstrated how these categories emerge from a pattern of theoretical differences found within the deliberative democracy literature. The chapter will conclude with a defense of the discursive variety of deliberative democracy. The defense will be based on the ability of discursive deliberative democracy to accommodate the best normative visions of expertise described in chapter two.

The Deliberative Democracies[66]

'Deliberative democracy' has in the recent past[67] enjoyed a revival that has thrust it into the foreground of both the STS policy literature as well as the literature in democracy theory. This interest is fueled by theories of deliberative democracy being explicitly appealed to in real-world political contexts such as the technology assessment institutions that we have explored. Since the chapter takes as its main aim the analysis of the use of 'deliberative democracy' rather than deliberative democracy

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[66]See Collier and Levitsky's "Democracy and Adjectives: Conceptual Innovation in Comprehensive Research." *World Politics.* 1997. 49:3 pp. 430 - 451. This article describes the emergence of subtypes of democracy theory which wrestle with the competing aims of analytic differntiation and conceptual validity. This dissertation is very much participating in this by breaking the subtype of democratic theory (deliberative democracy) into further subtypes.

[67]John Dryzek places the "definitive deliberative turn" in democracy theory around 1990. (p. v. *Deliberative Democracy and Beyond*). It should be mentioned, though, that Joseph Bessette is widely recognized as having used the term "deliberative democracy" for the first time as early as 1980. Both of these points need to be seated within the recognition that the term deliberative democracy does not become popular within real-world political economy until well into the first decade of the 21st century.

itself, it will focus primarily on the connections between the appearance of 'deliberative democracy' in the STS policy literature and the appearance of 'deliberative democracy' in the practical political sphere. That is, this chapter will not try to give a full account of what a good theory of deliberative democracy might (or perhaps ought) to look like. Rather, it will deal with what theories exist and how those theories are used to justify particular participatory practices in the STS policy domain.

When this connection is foregrounded it will be shown that the seeming unanimity in the STS policy domain that appeals to 'deliberative democracy' hides a vast number of differences in what exactly counts as both 'deliberative' and 'democratic'. This is because of the differences in appeal to democracy theorists. This apparent diversity ought not be overstated, however. There is indeed a convergence on 'deliberative democracy' in the STS policy domain that suggests a general agreement on the basic substance of a more generally 'participatory' democracy movement. However, there is very little agreement about how exactly this shared theoretical commitment translates into real world participatory mechanisms. This disagreement is the central *explanandum* of this chapter.

The foregrounding of the connections between the two domains of STS policy and socio-political philosophy and the resultant visibility of disunity among appeals to 'deliberative democracy' in the STS policy literature is important in a number of ways. The most important of which is to explain why, despite apparent unanimity on the conceptual level ('deliberative democracy'), there is little agreement on what practical models can best facilitate the realization of this democratic ideal when it comes to real world participation. The diversity of practical models can, this dissertation will argue, in part, be explained by the hidden differences in the socio-political literatures on democracy theory appealed to in the STS policy literatures. By foregrounding the connections between practical models of engagement suggested in the STS policy domain and theories of deliberative democracy, it

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will be shown that there is no unified theory of 'deliberative democracy' that is being appealed to but, rather, a variety of theories of democracy that range over a spectrum.

There are a number of tendencies in the growing literature on deliberative democracy that occur often enough to suggest a set of categorical differences between competing models of deliberative democracy. Cataloguing these differences and suggesting a few differing accounts of deliberative democracy will be an important part of this chapter that will allow for an important critique of how the term 'deliberative democracy' is appealed to in the STS policy domain as well as the real-world political sphere.

Theories of deliberative democracy, of course, share key features that make them specifically 'deliberative' theories of democracy. The typology suggested here is meant only as a way of distinguishing between differing accounts of a theoretical approach that requires a great deal of agreement. As such, the types of deliberative democracy identified below are not intended to be mutually exclusive or collectively exhaustive of all possible theories of deliberative democracy. Rather, they are intended to identify and lend voice to delineating trajectories within the socio-political domain that have important consequences for how models for real-world participation are imagined.

Three different groupings of deliberative democracy theories will be identified on the spectrum of deliberative theories of democracy. These are (my own terminology) 'liberal constitutionalist deliberative democracy;, 'disagreement-sensitive deliberative democracy' (moral disagreement), and 'discursive deliberative democracy'. Indeed, each of these terms (liberal constitutionalist, 'disagreement-sensitive', and 'discursive') can, under my reading, be viewed as translations for different uses of the word 'deliberative' in the STS policy domain (translations into the socio-political

philosophy domain, that is). It is here that this chapter will provide a 'stand-alone' original analysis of the current debates on deliberative democracy in the socio-political philosophy literature. The central point of this stand-alone analysis will be that each of these seemingly disparate theoretical orientations share enough to be considered 'deliberative democratic' approaches (as evidenced by their inclusion under this heading in the STS policy domain).

Since the literature on deliberative democracy has become something of a cottage industry, it ought not be too surprising that under the umbrella of 'deliberative democracy' we find a large amount of diversity. The fact that such disparate (yet importantly similar) notions of democracy live under the same name in the STS policy domain (and elsewhere) says a great deal about the performative power of the phrase 'deliberative democracy'.

'Deliberative' democracy can in many ways be seen as a response to problems surrounding authenticity and legitimacy that arise in more traditional aggregative theories of democracy. Public policies in a democracy need to be, at least in principle, justifiable to the people who are subject to the policy. This means that upon reflection people could and, in fact, would accept the public policy. This acceptance justifies public policies, thus making them legitimate forms of coercion in a democratic state. In traditional aggregative democracy theories, the 'collectivity' of collective decision-making is guaranteed by 'democratic' mechanisms (voting, representation, polling, etc.) that are supposed to ensure that the 'demos' in democracy is respected. Direct participation via deliberation, it is argued, is a more authentic way to arrive at (not necessarily discover) a public will with regard to a particular issue (in our case a scientific or technological issue). This is argued on practical grounds as well as epistemic grounds. Practically speaking, the more direct the route from public to policy, the easier it will be to ensure isomorphism between the two. Epistemically, deliberation has a reflexivity built into

it that elicits more than a simple articulation of a predetermined and predefined preference. Importantly, deliberation calls for reflection on issues that allow for preference formation as well as reflection of predetermined preferences in light of new information and other points of view. In this way, it is at least possible for the outcome of a deliberative democratic process to be substantively different (i.e., "better") than the outcome of either a technocratic or an aggregative democratic process. This potential difference is where deliberative democracy theories lay a stronger claim of democratic authenticity as well as a claim of epistemic quality.

These theoretical advantages over traditional aggregative theories of democracy are especially meaningful for scholars of science studies. The well-documented decline in public trust in science and technology in the mid-twentieth century, often referred to as the crisis of legitimacy, resulting from environmental concerns, concerns over nuclear technologies, the use of defoliants in Vietnam, supersonic transports, et al. in conjunction with the growing grassroots democratic movements associated with the Anti-Vietnam movement set the stage for the idea of democratic control over science and technology to be taken very seriously. This, however, was met with strong resistance from many within the science community. While most within the scientific community agreed that science was being mishandled by those who had control over it, the solution for them was not a democratic one, but rather a technocratic one. The technocratic approach to the problem of the crisis of legitimacy is largely characterized by an insistence on the exclusive role of experts in public decision-making. This kind of technocratic fascism sits uncomfortably with the democratic notion that citizens in a democracy ought to have control over the basic conditions of their life. This tension is by no means a new one. Thomas Jefferson recognized the need to make sure that political power was never yielded to experts on the judgment that citizens are too poorly informed to make wise decisions for themselves.[68]

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[68]Thomas Jefferson, Letter to William Charles Jarvis, Sep. 28, 1820, in The Writings of Thomas Jefferson, Memorial Edition, Vol. XV (Washington, D.C.: The Thomas Jefferson Memorial Association of the United States, 1904), National

In the late 60s and early 70s, however, this tension existed in the new and more urgent context of the more general social upheaval of this time. Something had to be done to address the concerns of the public regarding the potential (and actual) ills of modern science and technology. The literature on Deliberative Democracy is a direct response to concerns such as these.

Liberal constitutionalist approaches to deliberative democracy are perhaps the most well known formulations of the deliberative ideal. Made famous by theorists such as John Rawls and Jürgen Habermas, liberal constitutionalist approaches have, until relatively recently, dominated the socio-political philosophy literature. This approach is best characterized by two important features. First is the dominant role given to a predefined set of liberal values that constitute a 'democratic' deliberation. Second is the strong dependence on a criterion for rationality independent of the communicative sphere, usually cashed out in terms of 'public reasons'.

Disagreement sensitive approaches to deliberative democracy often view themselves as participating in the earlier traditions spawned by Rawls and Habermas while departing from them in some key areas. The most important of these areas is the structural role of predefined preferences in the communicative ideal of the deliberative space. Instead of appealing to predefined preferences in terms of rational self-interest, this approach insists that the liberal values that structure democratic deliberation be themselves open to deliberative scrutiny.   For Guttman and Thomson, this is, importantly, motivated by a desire to deal with moral disagreement. Indeed, as we move through the spectrum of the various approaches to deliberative democracy one can see the issue of disagreement

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Archives, Washington, D.C. (originally quoted in Bimber, p. ix)

and difference playing a more significant role in shaping the deliberative space.

Discursive approaches to deliberative democracy depart fully from Rawlsian and Habermasian traditions and instead are more responsive to critiques 'from the left' in the form of Radical Democracy. Where disagreement sensitive deliberative democracy theorists aim to account for and cope with moral disagreement, radical democracy theorists emphasize the intractability of difference and the agonistic nature of democratic deliberation.

Gutmann and Thomson identify different "kinds" of deliberative democracy theories by identifying a central set of problems that shape particular views on deliberative democracy.[69] These differences help us to place Gutmann and Thomson's own version of deliberative democracy within the spectrum of possible 'deliberative' democracy theories. It also serves a nice starting point to ground my own intuitions behind my typology of deliberative democracy theories. Similar descriptions of contestations within the literature on deliberative democracy are identified in other collections. One of the most popular collections on deliberative democracy is John Elster's *Deliberative Democracy*. In this collection he identifies a 'divergence of intensions' within the literature. He identifies these differences as falling into three categories: differences in outcome, process, and setting[70]. In Bohman and Rehg's edited collection, *Deliberative Democracy: Essays on Reason and Politics*, a similar set of differences is identified[71]. Finally, Samuel Freeman identifies a similar set of differences in his piece "Deliberative Democracy: A Sympathetic Comment."[72] Here I will focus on Gutmann and Thompson's account of the differences between theories of deliberative democracy. I mention the many places where these similar differences are identified to show that these are widely recognized

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[69]Gutmann, Amy, Dennis Thompson. *Why Deliberative Democracy?* Pp. 21 –39.
[70]p. 8 Ester, John. *Deliberative Democracy*. 1998. Cambridge University Press.
[71]p. xix. Bohman, James and William Rehg. *Deliberative Democracy: Essays on Reason and Politics*. 1997. MIT Press.
[72] Samuel Freeman (2000). "Deliberative Democracy: A Sympathetic Comment". Philosophy and Public Affairs 29 (4):371–418

differences that are not just found in Gutmann and Thompson's account. This lends credibility to not just the accuracy of my description of these differences, but to the fact that these differences are widely recognized. This further supports my typology of the different categories of deliberative democracy.

The first of these problems is captured by the choice between seeing deliberative democracy theories as "instrumental or expressive." This is essentially a question of the value of deliberation. Is deliberation in a democracy something to be valued solely because of its ability to enable citizens to make the most justifiable political decisions or is it something to be valued in and of itself in a democracy vis a vis its ability to promote a basic value to any democracy: mutual respect between decision makers and their fellow citizens?

The instrumental view of deliberation sees the deliberative process as a mere device to attain justifiable policies. Due to the nature of democratic requirements on justification, the best tool to achieve justification is a deliberative process. This view is held perhaps most famously, by Joshua Cohen. Cohen, who we will meet again as one of the neo-Rawlsian disagreement sensitive theorists, argues for an epistemic conception of democracy in which stronger claims to truth can be made if procedures incorporate a kind of populism (with some important substantive constraints insisted on by Cohen…which are ultimately what will place him in the Rawlsian liberal tradition) that is also required by deliberative theories of democracy.[73] This idea is generally appealing to me as an STS scholar who regularly teaches about Helen Longino's Perspectivalism[74] and Sandra Harding's notions of Strong Objectivity[75] and, more generally, standpoint theory. Each of these theories of epistemology stresses inclusion and plurality as an epistemic norm. It is tempting to read Cohen's take on the instrumental

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[73]Cohen, Joshua. "An Epistemic Conception of Democracy." Ethics, Vol. 97, No. 1. (Oct., 1986), pp. 26-38.
[74]Kellert, Stephen H., Longino, Helen and Waters, Kenneth C. ed. 2006. *Scientific Pluralism.* University of Minnesota Press. Minneapolis, Minnesota.
[75]Harding, Sandra. *Whose Science? Whose Knowledge? Thinking from Women's Lives*. 1991.

view[76] of deliberation as motivated by the same insights regarding the epistemic norm of inclusion. Much more will be said on these connections later as they speak to the heart of the connection between science studies and democracy literature.

The expressivist view maintains that deliberation, when properly articulated, embodies values central to the very spirit of democracy. As Dryzek puts it, "Deliberation as a social process is distinguished from other kinds of communication in that deliberators are amenable to changing their judgments, preferences, and views during the course of their interactions, which involve persuasion rather than coercion, manipulation, or deception."[77] Deliberation, thus understood, requires an ethos. In order to be said to have properly deliberated about an issue, a mutual respect for competing positions and those who hold them is demanded by the process. This mutual respect, the expressivist claims, is an essential component to any properly democratic order. Thus, deliberative democracy is not to be valued simply for its ability to justify policy, but also for its ability to foster and promote essential elements of democracy itself. Dryzek suggests that the expressivist view (though he doesn't call it this) is now widely held…"The essence of democracy itself is now widely taken to be deliberation, as opposed to voting, interest aggregation, constitutional rights, or even self-government."[78]

These differences are not mutually exclusive. In fact, it is likely to find both expressivist and instrumental arguments within a particular deliberative theory of democracy. The difference in emphasis and the tendencies to foreground one over the other, however, have very real consequences

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[76]In fact, Gutmann and Thompson make a point to say that the instrumental view is sometimes used synonymously with the "epistemic view." P. 21. *Why Deliberative Democracy?*

[77]Dryzek, John. P. 1. *Deliberative Democracy and Beyond.* 2000. Oxford University Press.
[78]*Ibid.*

for how approaches to deliberative democracy are appealed to in the STS policy domain. The liberal constitutional approaches clearly endorse an instrumental view of the value of deliberation. Rawls values deliberation in so far as its content is subject to prior scrutiny from independent liberal values. Habermas values deliberation as a process that provides a justifiable outcome. Disagreement sensitive approaches to deliberative democracy, on the other hand, value deliberation as both a means to achieve a just outcome as well as a basic requirement of any democracy in a pluralist society. Perhaps most importantly, the discursive approach to deliberative democracy as described here places a very strong weight on the value of deliberation for deliberation's sake. Indeed, it is the differences in how stakeholders frame their concerns, reflecting difference, that is of primary concern for the discursive deliberative democrat.

The second central problem that shapes particular views on deliberative democracy is the difference between substance and process. This is perhaps the most important distinction to be made between competing theories of deliberative democracy. It is for this reason that it is also the most contested. Pure proceduralists see the justificatory power of the processes involved in proper democratic deliberation to be absolute. Whatever is decided as a result of a democratic deliberation is by definition justifiable to all citizens of that democracy. Deliberative theorists who emphasize the importance of the substance of deliberation find the justificatory power of the process alone to be insufficient to screen off the possibility of fundamentally undemocratic policies being justified. Substantivists will insist that basic democratic values constrain procedural norms in such a way as to guarantee just outcomes.

Substantive democratic principles such as individual liberty, equal opportunity, fairness, mutual respect, etc. are necessary, it is argued, to ensure that the result of the democratic procedure is a

democratic outcome. This is where liberalism comes into the picture. Democracy is, according to substantivists, first and foremost a guarantee of particular liberal values. No procedure, no matter how deliberative, may justify an outcome that is contrary to a predefined set of liberal values. This is in many ways a response to the problem of majority rule in which the potential for unjust policies being decided on 'democratically" through majority rule – a purely procedural understanding of democratic justification – is all too obviously possible (via a cursory examination of the history of any existing democracy). John Rawls is, traditionally understood,[79] a classic example of the liberal constitutionalist tradition. Liberal constitutionalism here means that substantive liberal values are built into a constitution that constrains possible outcomes of democratic decision-making processes. In *A Theory of Justice*, Rawls articulates his theory of 'justice as fairness' by insisting on at least two substantive principles of justice that stand outside of any particular decision-making process and serve as boundary conditions (after the fact of procedure) for any legitimate (or justifiable) policies in a democratic state. Rawls self-identifies as, what he calls, a "quasi-pure proceduralist." What he seems to mean by this is simply what I am here calling substantivism. Namely, that the justness of a public policy is not literally defined by the right result.[80] At any rate, Rawls distinction between 'formal justice' and 'substantive justice[81]' seems to rely on the conceptual constraints imposed in the very fashion I have suggested substantivists insist on. Thus, for Rawls, justice requires, perhaps in addition to following a proper procedure, adherence to the two principles of justice. The principles are:[82]

> Each person is to have an equal right to the most extensive scheme of equal basic liberties compatible with a
> similar scheme of liberties for others.

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[79]"Traditionally understood" here really means "according to *A Theory of Justice*. Things get complicated when Rawls' second book, *Political Pluralism* comes into the picture. More will be said on this later.
[80]P. 318 *A Theory of Justice.*
[81]P. 50-52 A Theory of Justice.
[82]P. 53. A Theory of Justice.

Social and economic inequalities are to be arranged so that they are both (a) reasonably expected to be to everyone's advantage, and (b) attached to positions and offices open to all.

Any outcome of a procedure that does not adhere to either of these principles will not be properly democratic. "Justice as Fairness is not procedurally neutral. Clearly its principles of justice are substantive and express far more than procedural values, and so do its political conceptions of society and person, which are represented in the original position."[83]

For proceduralists, democratic principles such as equal suffrage, free political speech, reciprocity, etc. are all that is required to ensure democratic legitimacy and justification. Importantly, proceduralists need not deny that traditional substantive liberal values are important for a good (whatever that may mean) society, only that these values have a role to play in democracy theory. Pure proceduralists (those who are committed to the idea that a democratic process is sufficient for democratic legitimacy, with no concern for substance whatsoever) have two fundamentally different avenues through which to argue against the substantivists.

First, what Rawls may mean by "quasi-pure proceduralism" may simply be that a properly just process will always, as a matter of fact, result in a just outcome. The outcome is just, not because it is a result of a just process, though, but because it actually is just (adheres to the two principles of justice). If this is right, then Rawls may have recourse to the idea that his theory is practically no different from a proceduralist's (like Habermas). They differ only in what explains the justness of the outcome, not at all in how that outcome is arrived at (since there will never be any unjust outcomes from a properly democratic process). If this is right, the proceduralist may have a definitional way of making the

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[83]P. 192 Rawls, John. *Political Liberalism.*

substantivist's theory of democratic legitimacy/justification redundant (or superfluous).

The second avenue through which a proceduralist might argue against the substantivist is to appeal to a libertarian intuition by pointing out how citizen's moral and political sovereignty is compromised by binding decisions to a set of possible outcomes before any deliberation has taken place. This argument itself may take several forms. First, a proceduralist may recognize Platonic ideals of fairness and equality but not attribute to them any moral authority above the freedom of the citizen in the deliberative sphere. That is, a proceduralist might lexically rank values in a democracy, put liberty well above equality or fairness of opportunity, and decide that the substantivist's constraint on decision-making in the deliberative sphere is a violation of the higher ranked democratic value of liberty.

The second way a proceduralist might argue that the substantivist's constraints circumvent the moral and political authority of democratic citizens is to insist that democratic values such as equality, fairness, and liberty are not Platonic ideals to be discovered by democratic theorists, but malleable, real-world concepts that live in particular concepts that need to be themselves deliberated on by citizens in a democratic state. Thus, any attempt to predefine legitimacy in terms of Platonic liberal ideals will be a failure to respect the historicity of concepts such as fairness and justice. If this is right, then any deliberations about science and technology policy that do not include members of the public cannot ever be said to address social issues properly. This is because without a public deliberation one can never know what social values or ethical concerns have any bearing on the issue in the first place.

Habermas is, of course, traditionally understood to be a proceduralist. As in Rawls' case, this is often justified by appeal to Habermas' earlier writings. Lines such as "All contents, no matter how

fundamental the action norm involved may be, must be made to depend on real discourses (or advocatory discourses conducted as substitutes for them)."[84] In an oft-quoted piece Christina Lafont argues "only an interpretation of discourse ethics as imperfect procedural justice can make compatible its professed cognitivism with its proceduralism. Thus discourse ethics cannot be understood as a purely procedural account of the notion of justice."[85] {We have someone here as late as 2003, and as a direct result of the Habermas and Rawls debate, critiquing Habermas' position because of his commitment to pure proceduralism}

Here, as with the differences between instrumentalism and expressivism there is a bit of a false dichotomy. Very few theorists subscribe to purely procedural or purely substantive theories of deliberative democracy. John Rawls and Jurgen Habermas are traditionally used as the spokesmen for these competing views, but in a famous exchange, most agree that these differences are not all they are said to be. At any rate, again here we find two tendencies in the literature that lives under the name of deliberative democracy that have very great consequences when emphasized inappropriately in the STS policy domain.

Clearly, the liberal constitutionalist deliberative democrat's view on procedure/process tends toward the acceptance of one or the other. The disagreement sensitive deliberative democrat, i.e., Gutmann and Thompson, argue that this concept of deliberative democracy can "respect the merits of both proceduralism and constitutionalism while avoiding the failings of both."[86] They argue that successfully justifying an argument to others who disagree in terms that are mutually acceptable entails

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[84]In "Discourse Ethics." *Moral consciousness and Communicative Action*. MIT Press. 1993. p. 94.

[85]Lafont, Christina. "Procedural Justice? Implications of the Rawls-Habermas Debate on Discourse Ethics." *Philosophy and Social Criticism*, Vol. 29, No. 2, 163-181 (2003)

[86] p. 50 *Democracy and Disagreement*

the integration of substantive moral argument into the deliberative process. In this way, neither the process nor the substance of democratic deliberation has priority. Instead, the two elements of liberal democracy coalesce into an understanding of a liberally substantive deliberation which promises to break the logjam created by the liberal and procedural components of liberal democracy (the democratic paradox). Here, the discursive and disagreement-sensitive approaches to deliberative democracy agree.

The third central problem that shapes particular views on deliberative democracy is the debate surrounding the idea of consensus. This issue cuts at the heart of the very idea of deliberative democracy, which, after all, is an outcome-oriented theory of democratic justification. What kind of outcome does a deliberative theory require in order to achieve one of its primary goals; that of democratic legitimacy (the ability to justify decisions to everyone in a society who stands to be affected by them.). Is unanimity of any sort required for this legitimacy? Is unanimity something that is even desirable in a democratic state?

These questions (and their answers) constitute what Gutmann and Thompson identify as one of the most intractable disagreements among deliberative democracy theorists.[87] There are two main approaches that motivate this disagreement. Many deliberative democracy theorists insist that a consensus is not only possible, but required and made necessary by the justificatory obligations of the deliberative sphere. These consensualists can argue from a number of different positions. First, if one builds into the requirements of the procedure of deliberation a stringent enough notion of public reason, one can basically define consensus into the outcome of a process. That is, it is possible to define public

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[87]P. 26 Why Deliberative Democracy?

reason as that which all people in a democratic state (without appealing to their own comprehensive moral worldview) would agree to once operating with fair terms among free and equal persons. In this way, it is possible to define the outcome of a legitimate democratic deliberation as one that is consensual.

A second way a deliberative democracy theorist can defend a consensualist approach is to abandon the Rawlsian prohibition on endorsing particular comprehensive moral worldviews and embrace a "thick" notion of the good that serves as a desirable aim for a particular democratic society to strive toward. This notion of a "thick" good goes well beyond the basic principles of liberalism insisted on by the substanivists and certainly well beyond the procedural goods talked about by the proceduralists. A "thick" conception of the good seeks a form of cooperation based on a common understanding of what the good life is that all citizens could (in fact, "ought to") accept.

Pluralists, on the other hand, reject the very possibility of unanimity and consensus as a product of a specifically democratic process (involving human beings from this world). Pluralist deliberative democracy theorists will still maintain a "thin" conception of the good (since some grounds for agreement are necessary for there to be any practical (and perhaps binding) outcome of deliberation). A "thin" conception of the good is defined by either the classical procedural goods of deliberation; meta-level methodological principles of freedom and equality required for a democratic deliberation or a basic set of liberal values that again function on a meta-level by structuring permissible reasons in a public sphere (typically specifically prohibiting appeal to comprehensive moral worldviews).

Under the pluralist conception of deliberative democracy, justification need not require unanimous agreement. While the deliberative sphere ought to try to reconcile as many disagreements

as possible, intractable differences will always leave fundamental disagreements. These differences are cashed out in terms of basic differences that sprout from an understanding of the basic human condition (our incomplete and often incompatible empirical and moral understandings of the world) or, more interestingly (for our purposes in this dissertation) in terms of identity politics. In this way, pluralists emphasize the intractability of moral disagreement. Some deliberative democracy theorists (Gutmann , Thompson, Dryzek) take on this intractability and highlight it as an area where deliberation is especially desirable (in that it may be possible to justify decisions in the public sphere without unanimity or even the pretense of it). Radical Democracy takes the fact of intractability of difference and faults deliberative democratic approaches.[88] Here it is necessary to examine whether it is true that radical difference makes agreement impossible. Dryzek spends a great deal of time defending the discursive variety of deliberative democracy against the idea that it is incapable of dealing with radical difference. He argues that if difference can be foregrounded and the potential for repression of certain voices noted, the discursive process is capable of dealing with radical difference.[89] The primary way discursive democracy deals with this problem of difference is to open both the substance and the process of the deliberative forum itself up to deliberation. It does so in a way that pays special attention to the sources of these differences. The recognition that differences across identity are often marked by differences in political power is of central concern. In this way, the traditional ways in which problems are framed are themselves open to contestation. This requires expanding the category of legitimate deliberative fora. Dryzek accommodates this by allowing a more diverse array of discursive practices to count as deliberative. As we saw in Chapter 1, this includes a diversity of discursive modalities that allow for differences in ways of knowing while still maintaining the essence of deliberative democracy (i.e., Gutmann and Thompson's reciprocity, publicity and accountability).

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[88]Mouffe, Young, et al.
[89]See especially page 65 in *Deliberative Democracy and Beyond.*

The last of the central problems that define the differences among deliberative democracy

theorists that Gutmann and Thompson identify is the issue of the "reach" of deliberative democracy.

Not all deliberative democracy theories, it turns out, are committed to participatory democracy rather

than representative forms of democratic decision-making. In fact, Gutmann and Thompson side with

Joshua Cohen and the broader Rawlsian tradition[90] in recognizing some fundamental shortcomings of

the more direct, participatory approaches. This comes down to a more general disagreement about

whether deliberative democracy is something to be desired in solely governmental institutions that are

the "core structures of a constitutionally organize democracy" or desired as an ideal of civil society as

well.

This debate lives under the more general heading of the "Deepening Democracy" movement

that is largely ignored by Gutmann and Thompson.[91] It is here that we are introduced to another set of

distinctions that will be helpful for our typology of deliberative democracies.

John Gaventa places deliberative democracy as one choice among others in the 'deepening

democracy' field.[92] Within the field of 'deepening democracy', there lives four "broad approaches"

according to Gaventa. These are: 'civil society' democracy, participatory democracy, deliberative

democracy, and empowered participatory governance. Notice that deliberative democracy is only one

of the available approaches to deepening democracy. By untangling the differences between

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[90]"Deliberation and Democratic Legitimacy" in Estlund *Democracy*. Also, Thomas Cronin in *Direct Democracy: The Politics of Initiative, Referendum, and Recall*. 1999. pp. 38 – 59.

[91]Though not entirely. A passing reference to a "participatory approach" is made in footnote 30 in Chapter 1 that mentions Fung and Wright's edited collection *Deepening Democracy*. Why this is here called "participatory approach" is not clear, since the level of participation by the public is a methodological question while the scope of democratic relationships among citizens of a democracy is primarily a moral one.

[92]"Triumph, Deficit, or Contestation: Deepening the Deepening Democracy Debate." P. 3.

deliberative democracy and these other approaches we will have another resource for locating more precisely what deliberative democracy implies and what it does not (with specific reference to the issue of the scope of deliberative democracy). This issue is especially relevant for this dissertation since it asks about how deliberative democracy might affect the specific area of science and technology policy. Indeed Gutmann and Thompson, Cohen, and even Habermas in favoring representative democracy have specifically in mind issues that may benefit from a particular level of experience (or expertise?). Typical areas of concern here are the military (an area where people necessarily have different levels of knowledge) or intra-governmental affairs (which, presumably, politicians will have more experience with). Chapter 2 has provided us with a guide for how we should be thinking about science and technology fitting in here. In Chapter 2 I argued that there are specific ways in which we need to 'deepen democracy' with regard to science and technology policy. These include what constitutes the category of expertise as well as who gets to frame problems in science and technology policy.

Civil Society Democracy and Deepening Democracy

Civil society democracy (sometimes called associationalist theories of democracy) theorists emphasize the role of a civil society in a democratic state as a watchdog or check on government behavior. Through development of powerful 'associations', civil society can serve as a countervailing force against the state. It should be noted that this take on democracy theory has been interestingly tied to deliberative democracy in Stephen Elstub's *Towards a Deliberative and Associational Democracy*. There Elstub notes the shortcomings of a purely associationalist approach to democracy and incorporates its strengths into a rounded deliberative democracy approach. Here, however, Gaventa wishes to highlight a theoretical approach that emphasizes civil society as an autonomous body from the state capable of exercising control over ostensibly democratic governmental institutions. So, while

Elstub may get some mileage out of the fruitful combination of associationalism and deliberative democracy, it should be clear that the faith in an autonomous civil society serving as a 'democratic' check on democratic governmental institutions is, under Gaventa's reading a categorically different approach to deepening democracy from the deliberative democracy approach. We will see why and how exactly below.

Participatory Democracy and Deepening Democracy

This form of deepening democracy theory emphasizes the possibility of "co-governance" between citizens and the state. It emphasizes inclusion in "core activities of the state"[93] that come about as a result of top-down initiatives or bottom-up demands for inclusion. Without being specific about how, the participatory democracy approach to the deepening democracy field emphasizes the creation of and occupancy of 'democratic arenas'[94] within the processes of governance itself. As we saw above, under Guttman and Thompson's view representative democracy may fully satisfy the demands of some of the different deliberative democracy approaches. Here, we see Gaventa making this same point. Of course, as has been pointed out, there are forms of deliberative democracy that insist on participatory, direct democracy. Some of these can, in fact, be seen as a response to the question of how best to operate within the new democratic arenas made available. More on this below.

Deliberative Democracy and 'Deepening Democracy'

Gaventa here points to the talk-centricity of deliberative democracy approaches to deepening

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[93]See John Ackerman's "Co-governance for Accountability: Beyond "Exit" and "Voice."
[94]See Cornwall and Coehlo 2007. *Spaces for Change? The Politics of Participation in New Democratic Arenas.*

democracy. Using our friend John Dryzek as the primary example, Gaventa points to Dryzek's emphasis on the discursive nature of democracy as a conception that has made the idea of democracy capable of encompassing civil society and the state. Gaventa also makes note of the fact that "deliberative" democracy is what is responsible for much of the recent innovations in democracy practice. Specifically mentioning citizen-juries and deliberative meetings, Gaventa notes the "huge and interesting array of innovations in practice" spawned by theories of deliberative democracy. After rehearsing the criticisms of deliberative democracy (it favors consensus over difference, narrow understandings of what constitutes 'reason', a lack of appreciation of conflict in public life, a lack of appreciation for the role of power dynamics, and making assumptions about the public space that simply may not exist in many countries (Gaventa is a big fan of the global north/south distinction.), necessary trade-offs between quality of deliberation and the depth and quantity of participation, and how and by whom such trade-offs are made).[95]

Empowered Participatory Governance (EPG) and Deepening Democracy

Here Gaventa utilizes a distinction he borrows from Fung and Wright.[96] Fung and Wright argue that there are 'thin' conceptions and 'deep' conceptions (not to be confused with the 'thin' and 'thick' conceptions of the good we talked about earlier) of democracy theory that cuts across the typology we have developed here. That is, one can have a more or less deep theory of associational democracy or a more or less thin theory of deliberative democracy. Fung and Wright use the term "empowered participatory governance" that attempt to reform the ways in which people can effectively participate in and influence policies which affect their lives. A particular conception of democracy is 'deeper' to the

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[95] He also seems to be a fan of the Deliberative Democracy Consortium {www.deliberative-democracy.net}.
[96] See Fung and Wright 2003 and Fung 2004.

extent it emphasizes such participation and influence, thinner to the extent it does not emphasize such participation and influence. Fung and Wright go further in articulating what they mean by deep democracy. "An empowered participatory governance orientation is based on principles of bottom-up participation, starting with a pragmatic orientation to solve concrete problems. At the same time, it seeks to foster deliberation in which participants listen to each other's positions and generate group choices after due consideration."[97] Finally, Gaventa points out several specific design properties of this empowered participatory governance.

a. A focus on devolution, but no mechanisms which have public authority.

b. Coordination and supervision by a strong central body to insure quality and to diffuse learning.

c. An attempt to harness state power.

d. Recognition of countervailing forms of power which help to open the public spaces and insure they do not become captured by existing power holders.

The distinction between 'thin' and 'deep' approaches to democracy theory located in Fung and Wrght's 'empowered participatory governance' approach fits nicely into Gutmann and Thompson's discussion of the scope of deliberative democracy. It allows us to introduce the terms 'thin deliberative democracy' and 'deep deliberative democracy'. We will see later how this distinction will track others in important ways.

Gaventa uses all of this to suggest that there is a strong need to pluralize the term democracy in order to deepen the 'deepening democracy' debate. Democracies in different settings, linking the civil and political, the problems of diversity, identity, and inclusion all constitute problems for the

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[97]P. 17 Fung and Wright 2003.

hegemonic neo-liberal understanding of capital 'D' Democracy. We need to democratize the theoretical

construction of democracy theory itself. Clearly here we have a vision of democracy only compatible

with what has herein been described as the discursive variety of deliberative democracy. While both

disagreement sensitive theories of deliberative democracy and discursive theories of deliberative

democracy emphasize a meta level need to place democratic values on the deliberative chopping block,

discursive deliberative democracy theories insofar as they concern themselves more emphatically with

problems of difference accommodate these issues best.

A Normative Vision for Deliberative Democracy and Science and Technology Assessment

Radical democracy theories are primarily a reaction to deliberative democracy. In fact, often

under the heading of radical democracy, theorists will point out flaws with deliberative approaches

while not offering a positive account of democracy at all. Two main problems with deliberative

democracy motivate radical democracy theory. First, are the classic problems with liberalism. The

notion that there are predefined 'democratic values' that ought to guide particular democratic choices is

one that is thoroughly rejected by the radical democracy theorist. The second main problem with

deliberative democracy that radical democracy theorists focus on is the problem of difference (problem

qua deliberation). As we have seen, it is possible to reject classical liberalism and remain a deliberative

democracy theorist. The problem of difference, however, remains an issue for deliberative democracy

theories. Thus, discursive deliberative democracy.

Discursive deliberative democracy endorses the notion of the historicity and malleability of

liberal values. The values that guide deliberation are to be discovered themselves in the process of

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deliberation.[98] This follows John Dewey's basic point in *The Public and its Problems* in which Dewey argues that preferences (ethical, social, etc.) with regard to certain controversies (i.e., scientific or technological) are not predetermined. That is, the public (or simply people) do not sit around with well formed preferences with regard to technological or scientific controversies (of course many do). Discursive deliberative democracy goes further, however, in suggesting that the basic values that guide ethical judgment with regard to these issues is itself also something that emerges out of deliberation rather than something that imposes constraints on it from the outside. Discursive deliberative democracy differs from other deliberative democracy theories in its recognition of the role of identity politics in deliberation. It endorses the agonistic nature of deliberation and resultantly places less emphasis on the outcome of deliberations than theories of deliberative democracy do. Discursive deliberative democracy endorses the deep democracy of Gaventa and seeks to keep deliberation open as democracy-in-action (in all its agonistic ugliness and messiness).

What this chapter has argued was that among the competing conceptions of deliberative democracy that currently exist within political democracy, it is the discursive variety that is best able to accommodate the concerns identified in Chapter 2 about the relationship between democratic citizens and technical experts. There we saw that there was a need to both expand the category of what constitutes legitimate expertise as well as include the public in issues of problem framing. The issue of the inclusion of nonexpert members of the public is not just accommodated by discursive democracy but is indeed insisted upon as a matter of democratic legitimacy.

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[98]What I have in mind here is primarily an issue of which democratic values are to be prioritized. In order for a theory to be democratic at all it needs to live somewhere within the bounds of the liberal values that constitute democracy itself. However, within these boundaries, contestations about which values take priority with regard to a particular policy exist. A simple example may involve the differences in the prioritization of safety versus the right to privacy (i.e., Patriot Act). Which value ought to be prioritized in policy is precisely the kind of question that should be opened to deliberative discourse.

This chapter has argued that in order to accommodate the concerns about expertise located in the third wave science studies literature, one cannot appeal to literature on deliberative democracy writ large. Instead a more nuanced understanding of deliberative democracy is required. It is only the discursive variety of deliberative democracy that is conceptually capable of handling these specific concerns. Discursive deliberative democracy satisfies the dual requirements of a theory of deliberative democracy capable of accommodating the problem of expertise identified in Chapter 2. The first of these aims is to provide a concept of deliberative democracy capable of not only explaining how members of the public ought to have a more participatory role in shaping science and technology policy, but justifying a specific means of doing so (the ground floor level of problem framing). The second aim, identified at the end of Chapter 2, is to provide an account of the constraints on what constitutes legitimate problem framing in a democracy. Discursive deliberative democracy while accounting for concerns of the radical democracy literature, still insists upon basic requirements of reciprocity, publicity and accountability, (though of course it allows for a far more diverse set of ways of expressing legitimate concerns within the confines of these principles in order to better accommodate difference).

So, while discursive democracy accommodates the constructivism and the open-endedness of deliberations about science and technology policy, it also constrains it in important ways. In Chapter 2, we saw that Collins and Evans took very seriously the problem of extension. Insofar as we want to maintain the ideal of the Western image of science, Collins and Evans saw a need to set boundaries around types of experience that constitute expertise. They do so in an effort to keep the "floodgates of unreason closed".[99] Collins and Evans achieve this by identifying certain types of experience that while not officially accredited as expert, ought to be considered as such. When looking

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[99]Third wave science studies

at Brian Wynne's problem of framing, we saw a need for similar constraint. Here, we are ready to make sense out of such a constraint in a deliberative democratic practice. While fully respecting the different modalities that exist of expressing knowledge any theory of deliberative democracy, including the discursive sort, needs to insist on some level of reciprocity, publicity and accountability. These elements of deliberative democracy provide constraints on what constitutes legitimate framings of problems. The means of expressing knowledge are expanded by discursive democracy that remains a requirement that the sources of such knowledge be public. In this way differences in ways of knowing, saying, and doing are fully respected the substance of what is being said remains beholden to a basic requirement of accessibility. That is, reasons provided for framing a science and technology policy issue in one way rather than another are available to all.

This chapter has argued that it is discursive deliberative democracy that is best able to accommodate the needs of the democratization of expertise identified in Chapter 2. In the next chapter, we will apply the tools that have thus far been provided of a well-articulated normative vision of expertise in an appropriately explicit form of deliberative democracy of the science and technology literature. With this vision of expertise and this form of deliberative democracy in hand we're now able to turn our attention to the variety of participatory technology assessment mechanisms currently in use. I hope to show, given the commitments of third wave science studies and its use of deliberative democracy theories, that with what has been argued so far in this dissertation the normative differences between these mechanisms can be better appreciated than has thus far been the case.

Chapter 4: Technology Assessment: Past, Present, and Future

The purpose of this chapter is to take what has been argued from Chapters 2 and 3, which have

provided us with both a well articulated notion of the democratization of expertise, as well as an

appropriately specific theory of deliberative democracy and apply these normative visions to the

current market of participatory technology assessment mechanisms. The primary focus of this chapter

will be the relationship between the ways in which the deliberative democracy literature was appealed

to in specific contexts and the participatory mechanisms that were instituted as a result of the

interaction between the deliberative democracy literature and the local cultural and institutional

influences. Many places in which deliberative democracy was appealed to succeeded in instituting

fairly robust participatory mechanisms, while others succeeded in instituting programs that were little

more than window dressing for technocratic approaches to science policy.[100] There are some clear

differences in the ways in which deliberative democracy is appealed to in these contexts. Despite the

shared theoretical commitments to a 'deliberative democratic' approach, radical differences in the

quantity, quality, and expected outcome of public participation persist. It will be shown that (in

addition to the differences between local cultural and institutional differences) an equivocation between

the three distinct types of deliberative democracy, as identified in Chapter 3 is taking place in debates

about participatory technology assessment. When these differences are foregrounded, the differences

between the quantity, quality, and expected outcome of participatory mechanisms is, at least partially,

explained. This insight, will, in turn, provide valuable guidelines for how the new visions of the OTA

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[100]More on the metric of what constitutes "robustness" in participatory mechanisms below.

ought to be couched in terms of democracy theory here in the US. Learning from the past mistakes of the EU with the US OTA model can provide insight into what forms of democratic participation may work in America.

The literature on Deliberative democracy is unique in this respect. It is couched in terms that are meant to be practical and action-guiding in a way unlike other forms of democracy literature. This is true for two reasons. First, it is not uncommon to find article titles such as David Guston's "Deliberating Nano-technology in the US" which simultaneously serve as practical guides for action about their subject (in Guston's particular case nano-technology in the US), but also make important theoretical contributions to the literature on deliberative democracy more generally. This is reminiscent of the familiar "Social Construction of X" phenomenon in STS in which articles about the "social construction" of some technical artifact serve as case studies as well as theoretical contributions to the literature on social constructivism. Second, there are a number of policy think tanks such as the Deliberative Democracy Consortium, the Center for Deliberative Democracy, the Deliberative Democracy Project, and the Loka Institute which contribute regularly to the literature on deliberative democracy, but also actively pursue policy objectives (at least in a procedural way…i.e., the no taxation without deliberation movement set up by the Deliberative Democracy Consortium). The European experience is especially revealing in this respect. The connections (from the causal to the barely influential/non-existent) between academic writings on democracy theory and actual mechanisms for public debate are well documented in Vig and Paschen's *Parliaments and Technology*. It will become clear that certain forms of participatory mechanisms owe a great deal to particular forms of deliberative democracy. Recognizing these connections, will, again, provide insight into how the new OTA gets talked about in the US.

I. *The Office of Technology Assessment (OTA)*

During her 2008 presidential campaign Hillary Clinton made a promise to restore an office of the United States Congress that had at that point been defunct for 13 years.[101] That office was the Office of Technology Assessment (OTA). During its 23 year existence, the OTA published reports on controversial and public-interest scientific topics ranging from Climate Change and health care to acid rain and polygraphs. What made these reports stand out from common scientific documents was their focus on public interest. This model was widely copied around the world. In 2009 Rush Holt (a member of the house of representatives) wrote an Op-ed for *Wired* magazine titled "Reversing the Congressional Science Lobotomy"[102] in which he argued for the restoration of the OTA. Recently in April 2010, the Woodrow Wilson International Center for Scholars published a report titled, "Reinventing Technology Assessment."[103] This report, Richard Sclove from the Loka Institute, outlines the recent emergence of the movement to "modernize" the OTA. Sclove points specifically to Darlene Cavalier, a popular citizen science advocate and author of the (oddly named) blog "Science Cheerleader."[104] Sclove and Cavalier call for the OTA to be reinvented to emphasize "citizen engagement" and be driven by both "expert and participatory technology assessments" for Congress. To achieve this goal, Sclove and Cavalier[105] lay out an outline for a nation-wide network of nonpartisan policy research organizations, universities, and science museums. He calls this network the Expert and Citizen assessment of Science and Technology (ECAST). In Chapter 5, I will explore in further detail

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[101] She promised this in a speech to the Carnegie Institution on October 4, 2007. This was specially noted in a NY Times piece published the next day ("Clinton Says She Would Shield Science from Politics.") (She had declared her candidacy in January 07).

[102] http://www.wired.com/wiredscience/2009/04/fromthefields-holt/

[103] http://wilsoncenter.org/topics/docs/ReinventingTechnologyAssessment1.pdf

[104] http://www.sciencecheerleader.com/

[105] Darlene Cavalier (July 7,2008). "Harnessing Citizen Scientists". Science Progress. Darlene Cavalier (April 29, 2010). "A Little Respect: Involving Citizens in Technology Assessment". Discover.
http://wilsoncenter.org/topics/docs/ReinventingTechnologyAssessment1.pdf

how the conclusions in this dissertation apply to the recommendations found in Sclove's report. First, I want to explore the history of the OTA in context. Understanding America's first experience with technology assessment is crucial to understanding how the OTA might be reinstituted.

I. *History of the OTA*

What follows is a brief history of the OTA. We first look closely at the social context in which the OTA was created. This context is a familiar one to science studies scholars. Often referred to as the "crisis of legitimacy," the early context of the OTA was one of general social upheaval in which science and technology policy was being severely scrutinized and questioned due to a number of important, and, at this point, well-documented movements (i.e., the birth of the environmental movement, the anti-nuclear movement, the anti-Vietnam movement, etc.). These generally successful movements lead by folks such as Rachel Carson, Ralph Nader, and Barry Commoner, created a context in which a Democratic Senator from Connecticut, Emilio Daddario was able to leverage his subcommittee on Science, Research, and Development into a technology assessment mechanism (the OTA) within Congress whose principle goal was non-partisan, objective policy advice. Daddario, who is credited with having coined the term "technology assessment" in 1966,[106] was clearly influenced by the growing grassroots democracy movements and the call for more direct and meaningful participation by the public in policy-making. The degree to which this concern was later recognized or respected in actual practice of the OTA has been critiqued heavily.

The US experience with technology assessment is marked by an ongoing battle between

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[106]Herman and Jensen, 1997 (quoted in Vig and Paschen, p. 3)

technocratic approaches and democratic approaches to science and technology policy-making. Various techniques have been used to limit the demands for a redistribution of power over science and its social applications, despite an apparent opening-up of decision-making. One has been the ability to control the structure of the decision-making agenda – for example, by deciding which forms of public participation will be permitted at which stage, and what their final impact is going to be. A second has been the power to lay down the boundary conditions for participation, determining which types of arguments will be considered by decision-makers, and thus defining the limits of legitimacy in both technical and political terms. By the use of such techniques, as we shall see, a gap has been successfully maintained between public participation in decisions about science and technology and the placing of such decisions under democratic control. Understanding how this has been achieved is an important part of any attempt at devising a long-term strategy by which the conflicts between science and democracy can be resolved.[107] The OTA model was to be the battlefield in which these competing visions of science and technology policy-making fought it out. These battles fought out in a number of different ways and in a variety of contexts. In Eijndhoven's oftquoted piece "Technology Assessment: Product or Process?", he characterizes the differences in outcome of these battles in terms of four different paradigms. These paradigms are the classical technology assessment paradigm, the OTA paradigm, the public technology assessment paradigm, and the constructive technology assessment paradigm.[108]

First, what Eijndhoven called the classic technology assessment paradigm, was already recognized to be flawed by the OTA paradigm. Under this model it was assumed that in order to assess the impacts of a technology, one need only gather the appropriate facts about the technology in an effort to predict how such a technology would impact society. This model though (and now we're talking about pre 1970s) was demonstrated to be impractical for two reasons. The first, predicting what

[107] p. 220 Dickson (The New Politics of Science)
[108] p. 275 Eijndhoven, Josee C.M. "Technology Assessment: Product or Process?" *Technology Forecasting and Social Change.* 54, 269-286 (1997).

technologies are going to do regardless of what factual information one might be privy to, turns out to be very hard. Second when one speaks of the impacts of technology on society, it is impossible to do so without engaging in politics. Thus, this simple positivist model of technology assessment is already something that the OTA paradigm was meant to combat. Through the inclusion of a diverse array of stakeholders the OTA hoped to gain legitimacy in an effort to combat the charge of political bias.

Thus we will look briefly at the 23 year existence of the OTA. What procedures did the OTA employ to gather information? In particular, we want to pay close attention to the role of "participation" throughout the OTA's existence. How did the battle between the technocratic and democratic impulses of the OTA play out?

Princeton University maintains a helpful OTA Legacy website (http://www.princeton.edu/~ota/) which contains the electronic archives of the OTA. The diversity of scientific and technological issues that the OTA "assessed" quickly becomes evident.

From Morgolis and Guston[109]…Selected Legislative Activities Related to The OTA.

Field	Example Issue
Commerce	Supersonic Transport (SST)

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[109]p. 56, Chapter3, Morgan and Peha. *Science and Technology Advice for Congress*.

	Northeast Corridor Experiment
	Weather Modification
	Desalination of Seawater
Energy	Nuclear Power Development
	The Alaskan Oil Pipeline
	Hydroelectric power vs. ecology in the Northwest
Environmental	Trace Metal Poisons
	Food Supplies
	Pesticides
	Antibiotic Stock Feed
	Development of Electric Automobile Engines
	Strip-mining Techniques
Miscellaneous	Space Exploration
	Sea-bed Mineral Resources
	Antarctic Investigation
	Global Atmosphere Research
	Many Defense-related Issues

The methods by which the particular issue was assessed shifted from issue to issue. This is something that one of the assistant directors of the OTA was particularly proud of,

> For the first two decades of the Office of Technology Assessment's existence, its activities have often been referred to as a kind of experiment for trying to incorporate a better understanding of technology and science into the legislative policy process. One result of that experiment is the emergence of a consensus that it is impossible to reduce technology assessment to a formula. At OTA, there are many variations in the methods and approaches used in the work, and the agency's approach is, to be sure, but one variation of how technology assessment is viewed in different institutional settings.[110]

OTA reports were commissioned by the congressional Technology Assessment Board (TAB). TAB was made up of six Senators and six Representatives with equal representation from each party. The chairmanship and vice chairmanship alternated between the Senate and House in succeeding Congresses. The Technology Assessment Board appointed OTA's Director for a six-year term. An advisory council of 10 eminent citizens from industry, academia, and elsewhere outside the federal government were appointed by the TAB to advise the Agency[111].

The bulk of OTA's work centered on comprehensive assessments that took one to two years to complete. OTA undertook assessments at the request of the Chairman of any congressional committee. The Chairman could request the work personally, on behalf of a ranking minority member, or on behalf of a majority of committee members. The Technology Assessment Board could also request work, as could the Director. In practice, most studies were requested by the Chairman and the Ranking Member of a Committee, and many were supported by more than one committee.

OTA staff reviewed requests to determine whether resources were available, whether OTA

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[110]Peter Blair, Technology Assessment: Current Trends and the Myth of a Formula. Forecasting Institutions May 2, 1994. (on OTA legacy site)

[111] U.S. Congress, Office of Technology Assessment, The OTA Legacy: 1972-1995 (Washington, DC: April 1996) <URL: http://www.princeton.edu/~ota/>. (This next section is largely paraphrased from this official OTA website.)

could effectively provide the information, and whether interest was broad and bipartisan. The OTA Director submitted proposals to the Technology Assessment Board, which made the final decision on whether to proceed. The TAB reviewed all major studies prior to release.

The research and writing of the assessments was conducted by the OTA staff of about 200, of which two-thirds were the professional research staff. Among the research staff, 88% had advanced degrees, 58% with PhD's, primarily in the physical, life, and social sciences, economics, and engineering. About 40% of the research staff were temporary appointments of professionals recruited specifically to staff ongoing assessments. For specific information or analysis, OTA also contracted with key individuals or organizations. Contractors analyzed data, conducted case studies, and otherwise provided expertise to complement staff capability.

OTA worked to ensure that the views of the public were fairly reflected in its assessments. The Agency assembled an advisory panel of stakeholders and experts for each major study to ensure that reports were objective, fair, and authoritative. These panels met two or three times during a study. They helped to shape studies by suggesting alternative approaches, reviewing documents, and critiquing reports at the final stages. No attempt was made to develop consensus among panel members; in fact, a wide diversity of views was sought. OTA retained full responsibility for the content and conclusions of each report. In all, nearly 5000 outside panelists and workshop participants came to OTA annually to help OTA in its work.

In addition to the advisory panel, many people assisted with the studies by participating in technical workshops, providing information, reviewing documents, or just talking with OTA staff. These interactions helped OTA to identify and take into account contrasts between the perspectives of technically trained and lay citizens; the involvement of people with differing backgrounds and interests greatly strengthened OTA work.

Each assessment was subjected to an extensive formal review conducted by OTA staff and outside experts. After s completed assessment was approved by the Director, copies of the formal report were sent to the Technology Assessment Board for its review and authorization for release. Approved reports were forwarded to the requesting committee or committees, summaries were sent to all Members of Congress, and then the report was released to the public. OTA assessments were published by the Government Printing Office and were frequently reprinted by commercial publishers.

OTA worked with the other congressional support agencies the Congressional Budget Office, the Congressional Research Service of the Library of Congress, and the General Accounting Office in an interagency Research Notification System. Its purpose was to coordinate activities and exchange information to avoid duplication of effort. Representatives of each organization met regularly, and biweekly status reports were published in a central directory of congressional research activity. Similarly, OTA stayed in touch with the published work and current activities of analysts and researchers in Federal executive and legislative branch agencies and throughout the country.

The Office of Technology Assessment was reorganized periodically as it grew and as the types of technology expertise relevant to public policy evolved. By 1995, OTA was organized into two main analytical divisions, each comprised of three research programs, along with an Office of Congressional and Public Affairs.

Within the Industry, Commerce, and International Security Division, the Energy, Transportation, and Infrastructure Program was responsible for examining the role of technology in extracting, producing, and using energy resources; in designing, operating, and improving transportation systems; and in planning, constructing, and maintaining infrastructure. It addressed the impacts of these technologies and the factors that affect their ability to support commerce and other societal goals. Its work also included applications of materials to energy, transportation, and infrastructure systems, including the development of natural and manufactured material resources

through extraction, processing, use, and recycling or waste management.

The Industry, Telecommunications, and Commerce Program analyzed the relationships between technology and international industrial competitiveness, telecommunications and computing technologies, international trade and economic development, industrial productivity, and related topics. It considered the effects of technological change on jobs and training, and analyzed the changing role of electronic technologies in the nation's industrial, commercial, and governmental institutions and the influence of related regulations and policies.

The International Security and Space Program focused on implications of technology and technological change on national defense issues and on issues of international stability, arms control, arms proliferation, terrorism, and alliance relations. It addressed a broad range of issues including space transportation, earth observation, and international cooperation and competition in the exploration, use, and commercialization of space.

The second major OTA analytical division was the Health, Education, and Environment Division. Within it, the Education and Human Resources Program critically examined a wide variety of technologies for learning. It also analyzed science-grounded human resource topics, including the costs, availability, effectiveness, and impacts of technologies in areas such as long-term care, services and housing for people with disabilities, prevention of drug abuse, and issues of crime and violence.

The Environment Program addressed areas including the use and conservation of renewable resources; pollution prevention, control, and remediation; and environmental health and risk management. Its assessments included topics such as agriculture, management of public lands, biological diversity, risk assessment methods and policy, air and water pollution, management of solid, hazardous, and nuclear wastes, and the effects of weather and climate change.

The Health Program assessed specific clinical and general health care technologies as well as broader issues of health policy related to or with implications for technology. It also analyzed

applications of the biological and behavioral sciences, including biotechnology, human molecular

genetics, neurological sciences, and health-related behaviors. The Health Program was also responsible

for OTA's statutory methodology oversight responsibilities regarding Vietnam veterans health studies.

What methods best served the democratic functions meant to be fulfilled by the OTA would

become a central focus of the legacy of the OTA, our next topic.

In 1994 the Republican leadership of the 104th Congress announced that it would eliminate

funding for OTA as part of its commitment to balance the budget. After a series of efforts to save the

office by members of both parties, the GOP majority prevailed and the Office was shut down in 1996.

The events surrounding the elimination of the OTA are well-documented (as there were a number of

floor fights in Congress on the issue). Some of the key features include (1) As a part of the promise to

cut down on the size of government, Congress should first look to "clean up its own house" before

looking elsewhere for cuts. What was once a strength of the OTA (that it gave Congress a more equal

share of power viz a vis science and technology than the executive branch, now became one of its

biggest liabilities). (2) OTA reports took a long time to produce, and (3) since the executive branch had

science and technology advice, the OTA was seen to be redundant (again, its original strength

becoming a liability).[112]

B. *OTA's Legacy*

Those involved with the actual day-to-day practices of the OTA were reluctant to endorse a

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[112]These three things are from Guston and Morgolis (p. 71)

technology assessment "model." Indeed, one of the lessons touted by Blair (the assistant director of the

OTA quoted above) was that there was no single model of successful technological assessment

discovered or used by the OTA. Nonetheless, the "OTA Model" was to be influential, if not

constitutive, in the European experience with technology assessment. Vig and Paschen, in *Parliaments*

and Technology, trace the influence of the OTA Model on the first six "little OTAs"[113] of Western

Europe. These six little OTAs (Britain, France, Germany, Denmark, Netherlands, and the European

Parliament) are important since the shared experiences of these six groups would eventually form the

European Parliamentary Assessment (EPTA) network. This network, in turn, is today shaping the

technological assessment strategies of the European Union more generally.

Noting the success of the OTA, the need for technology assessment was addressed at a meeting

of the Ministers of Science of the OECD countries as early as 1971. In 1972, Daddario himself lead a

follow-up seminar for the OECD and an extensive report was published as a result. Here we have not

only the architect of the United States' OTA himself advising the nascent attempts at technology

assessment in Europe. In addition to these overlaps with the United States' experience with the OTA,

Europe was equally embroiled in social upheaval, especially regarding science and technology issues.

Public concerns over environmental pollution, nuclear power, nuclear weapons, recombinant DNA

research, computerization, and others contributed to the development of new social protests and citizen

initiatives throughout Western Europe in the 1970s. As in the United States, these movements

demanded greater accountability and public participation in the control of technology policy. This

social upheaval provided a momentum to the technology assessment movement that allowed it to

overcome the institutional barriers that made the implementation of such governmental programs more

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[113]P. 5 Vig Paschen

difficult in a parliamentary setting than it was in the U.S. It also, highlights another huge area of similarity of social context between the United States' experience with the OTA and the European equivalents.

While many similarities clearly exist between the U.S. and the European experiences with technology assessment, one big difference was to be the role that the literature on technology assessment (i.e., the role of social scientists) played in the development of these agencies. Noting several such quotes as the one from Blair above, Porter notes that the technology assessment practitioners[114] in the US demonstrated an "almost universal disdain for the technology assessment literature."[115] This stands in stark contrast to the European experience in which social scientists were often invited to various conferences and symposia which were meant to inform interested governing bodies on how to best go about technology assessment. These social scientists brought to the table new ways of conceptualizing the participatory components to the goals of technology assessment: namely, in the form of deliberative democracy. By 1980 five countries in Western Europe had technology assessment agencies modeled after the OTA. By 1997 a majority of the EU member countries had them.

a. *The Revival of the OTA in America*

While the contemporary context in which this renewed interest in the OTA currently resides is

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[114](i.e., those in charge of the OTA – but also other US organizations dealing with similar issues and practices such as the National Science Foundation (NSF), the National Academy of Engineers, and the Office of Science and Technology)

[115]Page 464. Porter, Alan L., Frederick A. Rossini, Stanley A. Carpenter, and A.T. Roper. 1980. *A Guidebook for Technology Assessment and Impact Analysis*. New York: North Holland.

radically different from that in the 60s and 70s, there are interesting similarities that make the renewed interest in the OTA understandable. The most important of these is the politicization of science and technology. Chris Mooney's *The Republican War on Science* amply demonstrates the general sentiment that under the Bush administration policies regarding stem cell research, climate change, evolution, sex education, environmental regulation, and others have reflected a right wing minority's view on these issues rather than the will of the public. In this context, a more direct democratic technology assessment agency that is independent of the executive branch can look understandably appealing.

It is within this context that the Woodrow Wilson International Institute for Scholars introduced the notion of "modernizing" the OTA. In their 104 page report, authored by Richard Sclove, titled, "Reinventing Technology Assessment: A 21st Century Model," they argue that a deeper understanding of participation can help to address the previous failures of the OTA. "Participation" is the watchword throughout the report. By reviewing several of the more participatory models in the European experience with technology assessment (primarily the Danish-style consensus conferences), Sclove argues that a new method for technology assessment is both practically possible and morally necessary.

Lest you should think these ideas are the wishful thinking of lefty academics, as already noted, Hillary Clinton and NJ Congressman Rush Holt have both shown significant interest in the revival of the OTA. It would seem that the possibility to learn from the European experience and create a new and better technology assessment agency in the US is a very real one.

I.   *What Can we Learn from the European Experience?*

As previously noted, the EU experience was by no means uniform. The diversity of technology assessment mechanisms that exist in Europe are helpful, however, in answering the question: What can the US learn from the EU's experience with the OTA Model? That is, which methods of participation work? What framing of deliberation best operates in certain governmental forms. We will first look briefly at the "little OTAs" of the original five European countries to implement them. We will then discuss what can be learned by examining the ways in which these different governing bodies accepted (or rejected) certain forms of technology assessment. We will see a typology of technology assessment mechanisms emerge from this examination. It will be argued that many instances of "technology" assessment serve as little more than technocratic window dressing in an attempt to cure an ignorant public of an irrational fear of the unknown and misunderstood. This will lead us into the next section of this chapter, examining the co-optation of the 'participatory' aspects of technology assessment that were so crucial in the initial concepts of the OTA and its European counterparts as supposed responses to legitimate public concern about science and technology.

A.   *The "Little OTAs" of Europe*

The United Kingdom and the Parliamentary Office of Science and Technology (POST)

The UK's OTA is the Parliamentary Office for Science and Technology (POST). Formed in 1989 with the appointment of its first director, the first key item on POST's agenda was how to emulate the activities of the OTA's staff of 200 with the very limited staff of POST.[116] The key issues were the maintenance of independence from governmental and private interests as well as addressing the same

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[116]References to emulation of the OTA are all over. See Michael Norton, p. 69.

issues the OTA took to be priorities. Specifically, addressing

- A pro-technology faith that science and technology can cure anything
- An anti-technology view that focuses only on the adverse side-effects (social and environmental, etc.)
- An expectation of instant solutions due to lack of awareness of timescales of R&D involved
- A lack of appreciation of the science and technology infrastructure needed to maintain a competitive economy (from education to production).

In practice, POST was to have two related but separate functions:

- A technology assessment function, which would review in depth the scientific and technological aspects of selected issues, how these interacted with public policy and options for future policy
- A more informational role, designed to provide MPs and Peers with an overview of scientific and technological factors that underpin so much of modern society, and how they impinge on issues of interest to Parliament. (from Norton, p. 69)

As with the OTA, POST made special effort to include "experts and stakeholders". These however, are almost always people chosen by those in Parliament and are experts in the traditional sense. In 1994, the POST successfully completed its first experiment in consensus conferences on biotechnology. This, however, took on a very different flavor than the Danish conferences after which they were modeled. Other attempts at participation (i.e., science shops (ran by science museums), informal science education programs, etc.) betray POST's underlying allegiance to a thoroughly PUST model of public participation, where "participation" is understood in terms of an ignorant public being informed by the more technologically literate expert.

Germany and the Technology Assessment Bureau of the German Parliament (TAB)

Germany's Technology Assessment Bureau (TAB) was also set up in 1989. While the idea of a technology assessment bureau was around for a while, the idea was often a politically charged one precisely because the general structure of the program so closely resembled that of the OTA.

Unlike POST and the OTA, TAB (sorry for all the acronyms) has a formalized, regular mechanism for dealing with specific scientific and technological issues. Phase one of each TAB study consisted of a preliminary study in which the state of research, the parliamentary need for information and action, the appropriate scope of the project study program and operationalization of the individual issues, the need for contributions from external scientists, scientific institutes, social groups, etc were all determined by the TAB Research Committee. Next, during the main study, the scientific work is subcontracted to a diverse array of "experts" making sure to include scientists who may disagree. Next, Workshops, and advisory panels are arranged to include representatives of political, scientific, and social groups that stand to be affected by the issue. The stated goal here is to "seek to involve as wide a range of social groups as possible."[117] Finally, a press conference is held and the results are disseminated in a concerted media effort.

France and the Parliamentary Office of for the Evaluation of Scientific and Technological Options (OPECST)

The French experience with the OTA model[118] was different from other European countries in a

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[117]P. 110 Vig and Paschen

[118]That the French were specifically thinking about the OTA model is evidenced in Maurice Laurent's Chapter in Vig and

number of ways. While the context of the crisis of legitimacy was shared by France, the mistrust was

placed more directly on the "technostructure" or the technocracy (apparently "technocracy" is an

especially derogatory term in French) rather than on the governing bodies. Thus, the aims of neutrality

and objectivity in the other technology assessment bodies was not of central concern in the French

context. This has lead the OPECST to more closely resemble a traditional decision-making tool

regularly used by parliamentarians to make public policy decisions. What is most distinctive about

OPECST is that the same persons are in charge of the scientific assessment as of the decision-making

process. This has lead the OPECST to be susceptible to scientific debates that are politically charged in

a way that the other OTA models specifically try to avoid. This, in turn, has severely limited the role of

participation in the French context. Says Laurent,

> OPECST tends to differ from the other OTA models in so far as it "refuses to organize "consensus conferences."
> Opening Debate to the public and getting it to participate in making recommendations is considered to be essential
> in many countries that increasingly call on panels of citizens selected in a more or less random manner. It seems
> that this mode of operating cannot be accepted by French members of Parliament who jealously guard their
> prerogatives and who generally consider that representative democracy remains the safest means to know the
> feelings of public opinion.[119]

The Netherlands and the Netherlands Office for Technology Assessment (NOTA)

A number of attempts in the 1970s were made by the Dutch to institute a specifically OTA-like

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Paschen (p. 127)

[119]P. 133 Laurent

model in the Netherlands.[120] The Dutch context is also clearly influenced by the crisis of legitimacy,
probably more so than any other, in that the ethical questions surrounding controversial sciences and
technologies were the primary concern for instituting a technology assessment program. However,
while this played a key role in the genesis of NOTA, as in other places, the involvement of the public in
matters of "societal concern" was downplayed if not entirely ignored for the first 15 years of NOTA's
existence. However, as a reaction to this downplay, NOTA (now known as the Rathenau institute) now
fosters famous public debates on the scope and implications of technology. Regularly holding
consensus conferences, the public is brought in as not just a passive consumer of science and
technology, but an active participant in the policies that guide it.

The Danish Board of Technology and the Teknologirådet

The Danish Board of Technology was established by law in 1985 as an independent
organization connected to the Danish Parliament. In 1995 it was expanded into a permanent institution
known as Teknologirådet. The Danish experience is by far the most participatory and has managed
more than any of its other "little OTAs" to stick to its original aim of addressing social and ethical
dimensions of science and technology. The roles of the OTA model in the founding of the
Teknologirådet played a telling role.

When the issue of a technology assessment board was put to the parliament two factions
developed. The first, lead primarily by the social democrats and the trade unions strongly
recommended a copy of the OTA. They wanted an institution closely connected to and directed by

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[120]Wisema, 1977 p.150 Vig and Paschen

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parliament, as an expert research and analysis tool. The other faction insisted on a broader societal technology assessment that put more emphasis on public debate than OTA did. They saw a need for comprehensive nonparty technology assessment that had "democracy itself as the target."[121] What resulted was a compromise in which neither of these factions dominated the outcome. As time went on though, the emphasis on public debate increased, eventually giving birth to the Danish consensus committee. These committees have, more than any other progeny of the OTA, had a remarkable influence on how other technology assessment programs viewed themselves.

The Danish Board of Technology has through a number of years harvested experience in a type of meeting that makes it possible to include the public and their experiences in the technology assessment. This is the "Consensus Conference" which gives ordinary people - lay people - the opportunity to assess a given technological development and make up their minds about its possibilities and consequences.

The conference is conducted as a dialogue between experts and lay people and stretches over three days where it is open to the public. The final document is passed on to the members of Parliament. Bridging the gap between the public, experts and politicians is thus an important aim of the Consensus Conferences held by the Board.

Topics which are suited for treatment at a consensus conference are characterized by:
- having current social relevance
- presupposing expert contributions
- being possible to delimit

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[121]"The Danish Board of Technology" – Lars Kluver - P. 175 Vig Paschen

- containing unclear attitudinal issues

The role of the experts is to inform a panel of citizens about the technology and its implications. Thereupon the citizens' panel drafts a final document which contains a clarification and a position on the issue. Consensus Conferences in Denmark have resulted in public debate on technology, and politicians have thus been made aware of the attitudes, hopes and concerns of the public. On several occasions the Consensus Conferences have caused political debate and initiation of new regulation. An example is the ban put on the use of gene testing for the purpose of employment or the contracting of insurance.

The panel of lay people is comprised of open-minded citizens of divergent backgrounds. What they have in common is a desire to probe the work of the experts. They have been found by sending out invitations to for example 1.000 randomly selected citizens above the age of 18. Among those who wish to participate in the conference 14 citizens are selected - with as much of a mix as possible as regards age, gender, education, profession and geographical place of habitation.

The citizens must receive a thorough briefing on the subject, so they are well-prepared to ask qualified questions to the experts. The preparations consist of information material on the topic and two weekend courses. During the weekends the citizens get to know each other. They formulate the questions which the conference will revolve around and participate in choosing the experts.

On the first day of the Consensus Conference the experts make presentations where they address the questions posed in advance by the lay panel. It is an intensive process where the 12-15 experts expound on for example financial, biological, legal, social and ethical aspects of the issue.

On the second day the morning is spent by the panel asking individual experts for elaboration and clarification of their presentation. The audience also gets the chance to ask questions. The rest of the day is a break for experts and audience, while the panel works on the final document. Late in the evening the first draft of the final document is ready for discussion by the panel. Thereupon follows another round where smaller groups hone the answers. The panel strives to find unanimous formulations.

On the third and last day of the conference the lay panel presents the final document to the experts and the audience - among them the press. The experts have the opportunity to clear up misunderstandings and correct factual errors. But they have no influence on the attitudes expressed by the panel. The final document of the lay panel together with the written contributions of the experts are set out in a report to the members of Parliament.

Below is a complete list of consensus conferences arranged by The Danish Board of Technology since 1987 when we developed the method. All though we have experimented with the method, all projects listed below are variations on a fundamental, methodological inclusion of lay people in technology assessment.

- Testing our Genes (2002)

- Roadpricing (2001)

- Electronic Surveillance (2000)

- Noise and Technology (2000)

- Genetically modified Food (1999)

- Teleworking (1997)

- The Consumption and Environment of the future (1996)

- The Future of Fishing (1996)

- Gene Therapy (1995)

- Where is the Limit? chemical substances in food and the environment (1995)

- Information Technology in Transportation (1994)

- A Light-green Agricultural Sector (1994)

- Electronic Identity Cards (1994)

- Infertility (1993)

- The Future of Private Automobiles (1993)

- Technological Animals (1992)

- Educational Technology (1991)

- Air Pollution (1990)

- Food Irradiation (1989)

- Human Genome Mapping (1989)

- The Citizen and dangerous Production (1988)

- Gene Technology in Industry and Agriculture (1987)[122]

A.   *A Typology of Technology Assessment Mechanisms*

Many recognize a basic difference between two broad categories of technology assessment

mechanisms in the European experience. The first, called the discursive model, is primarily

represented by the Danish and the Dutch forms of technology assessment. While the second, called the

Instrumental model, is primarily represented by the UK, French, and EU forms of technology

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[122] http://co-intelligence.org/P-ConsensusConference1.html

assessment. Chapter 2 of Vig and Paschen provides a nice description of this basic difference.

Discursive Mode	Encouraging Public debate on the interaction between technology, people, and society (Teknologirådet)
	Stimulating public debate and supporting political opinion forming (Rathenau Institute)
Instrumental Model	Informing and enlightening decisions made in Parliament (OPECST)
	Providing parliament with advice on technologies and technology-related issues (TAB)
	Providing parliamentarians with information that will widen their understanding of the scientific or technological implications of issues that involve them as legislators (POST)
	Providing expert scientific and technical advice to Euro-MPs (STOA)

Figure 2.1 p.51 Vig Paschen

Rowe and Frewer have done some excellent work in this area as well. In a recent paper[123] they

meticulously catalogue the various forms of public participation mechanisms that currently exist in

Western Europe. Under the rubric of "public engagement" Rowe and Frewer find at least three

different models. The first of these is what they term the "public communication" model of public

engagement. Under this model the public may "participate" by being the "passive recipients of

information from the regulators or governing bodies concerned." The second model that is sometimes

used under the rubric of "public participation" is what Rowe and Frewer term the "public consultation

model."[124] Under this second model the public may "participate" via the solicitation of public opinion

via polling,[125] surveys, or questionnaires. The third model Rowe identified is what Rowe and Frewer

term the "public participation" model of public engagement. It is under this third category of things

usually deemed public engagement mechanisms that we find the small number of things that will

satisfy the demands of deliberative democracy. Rowe and Frewer characterize this model as one that

allows for "active participation of public representatives in the decision-making process itself, such as

through lay representation on an advisory committee."[126] Some of the deliberative democracy theories

we will look at may take issue with the role of representation in this third model, but they will all agree

that the first two do not constitute "participation" in the democratically desirable sense. So, what Rowe

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[123]Rowe, Gene and Lynn Frewer. "A Typology of Public Engagement Mechanisms." *Science, Technology, and Human Values*, Vol. 30, No. 2, Spring 2005, pp. 251 – 290.

[124]P. 254 "A Typology of Mechanisms."

[125]There are some interesting attempts at forming 'deliberative' polls. This usually requires people to do more than simply express a predefined opinion (via the presentation of new information or even online tutorials), however, these efforts require a bilateral dialogue of sorts, and so likely will exist in the third model that Rowe and Frewer identify. More on this can be found at the Center for Deliberative Democracy at Stanford University: http://cdd.stanford.edu/polls/docs/summary/

[126]P. 254 "A Typology of Mechanisms."

and Frewer have provided us is a way to typologize the public engagement mechanisms that exist in the science and technology policy literature that allows us to rather quickly narrow down the field of mechanisms being talked about in the literature to ones that are compatible with any form of deliberative democracy. This point is well illustrated by how Rowe and Frewer characterize the differences in the flow of information between the three models.

Flow of Information

Public Communication:

   Sponsor   →   Public Representatives

Public Consultation:

   Sponsor   →   Public Representatives

Public Participation:

   Sponsor   →   Public Representatives

From Rowe and Frewer p. 255 "A Typology of Public Engagement Mechanisms."

Rowe and Frewer are not, themselves, necessarily pushing for the public participation model. In fact, they go on to identify what they call "between-mechanism variables" that may inhibit the success of any of the three models of public engagement. These between-mechanism variables include things such as better and worse methods for participant selection, facilitation of information elicitation, response modes, information inputs, the medium of information transfer, and the facilitation of the aggregation of participant learning. The aim of their piece is to clarify how different models of public engagement with varying degrees of compensation for between-mechanism variables will be effective in different contexts. For them, pointing out the participatory aspects of one kind of mechanism carries no normative dimension. Theirs is a project of clarification. They merely want the distinction to be clear, thereby allowing those who wish to "engage" the public via the public communication model to avoid the mistakes that result from confusing what they are doing with the public participation model.

In addition, Eijndhoven's four paradigms of technology assessment also do a nice job of typologizing the different mechanisms available from the EU experience in the little OTAs. As noted earlier, Eijndhoven identifies the classic paradigm from which the OTA was rebelling. However, once the EU experience with the OTA paradigm matured, new paradigms of technology assessment made themselves clear. Eijndhoven describes the maturation of the OTA paradigm in terms of the public assessment paradigm and the constructive technology assessment paradigm. While not all European experiences with the OTA paradigm led to the more participatory paradigms of the public assessment and constructive technology paradigms (notably, the UKs Parliamentary Office of Technology Assessment (POST) and the EUs Scientific and Technologic Options Assessment (STOA)). The Rathenau Institute in Denmark has had robust participatory technology assessment mechanisms in place such as the consensus conference model, and the Danish board of technology has moved even further in the direction of public participation to include members of the public in not just decisions of

the policing of science and technology and society but also in the actual design processes under the form of constructive technology assessment.

For the purposes of this chapter we will explore those public engagement mechanisms that are at least conceptually compatible with the kind of public participation implied by deliberative democracy. Identifying which contexts these mechanisms operate in will allow us to trace specific power dimensions in the process of instituting these particular types of mechanisms. Noting the difference of context and power relations in which the less participatory engagement models are instituted will allow for constructive comparisons. Rowe and Frewer break up the various public engagement mechanisms they have identified into the three models. Under the public participation models they include the following: science shops, action planning workshops, citizen juries, consensus conferences, negotiated rule making, task forces, deliberative opinion polls, planning cells, and New England styled town meetings.[127] Within this listing they cross reference internal differences with the between-mechanism variables thus further refining the "type" of public engagement mechanism model (So, within the public participation model there are type I public participation models, type II, type III, and type IV public participation models).[128] As we will see the deliberative democracy literature speaks directly to many of the between-mechanism variables and, in fact, prescribes how many of the issues ought to be handled. For now, we have the beginnings of a strategy for identifying particular types of mechanisms in particular contexts.

Science Shops

Perhaps the most popular form of public participation in science and technology policies in

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[127]281-282 "A Typology of Mechanisms."
[128]284 *Ibid*.

Europe is the science shop. In 2001 an EU Whiter Paper on Governance, in an effort to "bridge the gap between the EU and its citizens," committed itself to "enhancing the openness, participation, accountability, effectiveness, and coherence"[129] of science and technology policy making. Part of this effort is directed towards science. A working group was appointed by the commission that conducted a workshop which resulted in a report titled "Democratizing Expertise." The stated goal is to "improve the interactions between expertise, policy making, and public debate." The Commission aims to promote participatory procedures to include civil society, and to broaden the notion of expertise to include stakeholders' practical knowledge.[130] A later report, *Science and Society Action Plan*, commissioned by the EU takes these ideas a step further by calling for a "dialogue with the citizen." Developing the European network for science shops is chief among these efforts by the EU to establish a more democratic relationship between science and technology production and the public.[131]

Efforts of these sorts by the EU have been criticized as a response to a temporary fashion and may not play a long-term role in EU-policy,[132] but the presence of this language in these reports can still be considered important for a number of reasons. First, the criticism does indeed suggest a "fashion" albeit a supposedly temporary one to value the democratization of science and technology policy. The democratization of science and technology policy is not just being argued for in academic journals. It has found its way into the commissioned reports of the EU. Whether practically viable or

[129]Liberatore, A (editor). 2001. "Report of the Working Group 'Democratising Expertise and Establishing Scientific Reference Systems.'" European Commission, Brussels (Pilot: R Gerold). Available at: <http://europa.eu.int/comm/governance/areas/group2/report_en.pdf>.

[130]See Corinna Fischer, Loet Leydesdorff, and Malte Schophaus. "Science Shops in Europe: the Public as Stakeholder." Science and Public Policy, volume 31, number 3, June 2004, pages 199-211.

[131]European Commission (2002), *Science and Society Action Plan*. Available at: http://www.cordis.lu/science-society. Another interesting resource is the website for the mentioned network of science shops in Europe: ISSNET (www.scienceshops.org)

[132]Abels, G. 2002. "Experts, Citizens, Eurocrats – Towards a Policy Shift in the Governance of Biopolitics in the EU." *European Integration Online Papers* (EloP), 6 (19), 3 December.

not, its mere presence is something to be explained and understood better. This dissertation, in so far as it interests itself with the connections between democracy theory and science and technology policy, takes as its main aim the description of this "fashion." If the UK, with one of the technology assessment institutions that most closely resemble the conservativeness of the OTA, is on a trajectory toward increased participation, then this is an important source for our discussion of the reinstitution of the OTA in the US.

I.   *The Co-optation of Participation*

The Role of the battle between the technocratic and democratic approaches to the crisis of legitimacy cannot be understated in the context of these competing visions of "participation" in technology assessment. The OTA and its resultant offspring often succeeded at addressing particular technological and scientific issues but with very few exceptions left the basic political relationship by which science and technology are governed relatively untouched. If, as science studies scholars argue, social and political values saturate the scientific laboratory and the theories said to belong to science itself, then leaving the basic relationship by which science and technology are governed untouched limits the possibilities of technology assessment to solely reactive measures. This is an undesirable outcome for all involved, be they politician, scientist, or social advocate. This section of the dissertation will explore the various ways in which the attempts to democratize science and technology policy through the various technology assessment programs we have explored were successfully blunted by those working within a technocratic paradigm that was in direct conflict with the democratic paradigm others were operating within that gave rise to the original impetus for the need for technology

assessment programs. Why are there so many "public communication" and "public consultation" models of participation while so few "public participation" models? How exactly has "participation" been co-opted? As we will see, the democratic paradigm has been successfully blunted, but remains alive and well in many circles. The primary strategy used by those who aim to question not just particular controversial sciences and technologies but the underlying political relationship governing the political dimensions of how science and technology are policed, is appeal to deliberative democracy. The rest of the chapter will be exploring this strategy.

Science, Technology, and Power

In *The New Politics of Science*, Dickson famously describes the change in attitude about the steps needed to mitigate the less desirable social effects of science from one confined largely to professional circles in which a technocratic-driven confidence that more and better science and technology can cure the problems created by science and technology to a broader societal concern about the ways in which technology and science are regulated. Of course many separate events were responsible for this shift, but Dickson points to Rachel Carson's *Silent Spring* as one of these events with the greatest impact. While Carson was not the first point out the environmental harm caused by chemical pesticides, she was the first to

> bring together in a popular form the evidence against DDT from a number of separate scientific disciplines, building these into a generalized critique of the narrow focus of contemporary science and technology, of their apparent blindness to broad social and environmental effects, and ultimately of the gulf between the values of the laboratory and those of the surrounding society.[133]

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[133]P. 223 *The New Politics of Science*

This in conjunction with the other litany of these we've talked about already (in fact you can simply reference the OTA's list of reports above) lead to a concerted effort on the part of the scientific community to defend science and technology from an increasingly upset public.

This defensiveness lead to a number of initiatives that were meant to address the perceived lack of public understanding of science and technology and were ultimately successful in "blunting" the democratic force of the original calls for "public participation" in technology assessment models such as the OTA. These initiatives include the early NSF program of study in the Ethics and Values in Science and Technology (EVIST). Dickson makes a strong case that behind the pragmatic reasons for EVIST existed a political reaction aimed at raising the public's opinion of the inherent value of science and technology, thus "heading off demands for greater social control."[134] This political aim was recognized at the time and an attempt to supplement EVIST with a new program called "Science for Citizens" was made by Senator Edward Kennedy with the "enthusiastic support" of Ralph Nader. This proposal was not met with much enthusiasm and the bill never made it very far.

On the heels of this initiative came the technology assessment movement and the introduction of the OTA. Here again, there were two supposed aims. First, was the attempt to address the social and ethical concerns held by many. Second, was the ability to provide neutral and objective scientific and technological advice to Congress. Dickson notes that the same forces that shaped the EVIST program (literally many of the same people in Congress) shaped the structure and stated goals of the OTA.[135] These forces are primarily interested in protecting the bounds of what constitutes scientific

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[134]P. 228 Ibid.
[135]Dickson has a great critique of the founding of the OTA in terms of these power dimensions from pages 233 – 243.

critique. This tracks what has become known as the Public Understanding of Science and Technology (PUST) movement in science studies. This movement is characterized by a unilateral communicative scheme in which a supposed 'deficit' in knowledge is to be cured by scientists better educating an ignorant public so as to combat the lack of trust in science and technology. This deficit (described as "deficit model" as it would come to be known) is taken to be the main explanation for the crisis of legitimacy that took place in the late 60s. While this model has been heavily critiqued, its influence on what constitutes "participation" in technology assessment remains.

By setting the bounds on what constitutes participation, scientists have managed to appear to address social and ethical issues successfully while maintaining an unequal power dynamic between the expert and the concerned non-scientist. There are any number of examples of this that we saw in the last section. Science shops are perhaps the best. Under the framing of "public participation" members of the public are invited to attend workshops in which scientists teach the ignorant public of the technical components of scientific and technological controversies.

An alternative to PUST, Public Engagement with Science and Technology (PEST) has garnered a lot of attention within science studies. Under this model the concerns of the public are not seen as illegitimate expression of irrational fears of the unknown and misunderstood. Rather, they are seen as (potentially) legitimate competing perspectives on science and technology. Understanding of science and technology can take many different forms. Technical understanding is but one among other equally legitimate ways of knowing (e.g., ethical, political, environmental, etc.). Given this, the PEST model advocates for a bi-lateral communicative scheme in which the scientists and technicians maintain a voice of authority/expertise with regard to the technical components of a controversial scientific or technological issue while non-scientist stakeholders with social, ethical concerns have a shared place of

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import in the decision-making process (or at least the assessment process). How exactly this communicative process functions (or ought to function) is a live question and is one of the primary reasons science studies scholars appeal to theories of deliberative democracy with such frequency.

Conclusion:

This chapter has presented the diverse ways in which participation in science and technology policy has been institutionalized in real world practices. The European experiences with the OTA paradigm have taken a number of different pathways. The differences between these pathways to public engagement provides those who wish to reinstitute the OTA in a modern American context, with a variety of practical choices with regard to the role of the public in creating science and technology policy. This chapter then has attempted to merely describe the current state of affairs with regard to the current relationship between experts and nonexperts in modern industrial democracies.

Given what we've argued in Chapters 1, 2 and 3, we are now in a position to add a normative dimension to the descriptions found in this chapter. Chapter 2 argued that what constitutes legitimate expertise ought to be expanded to those people who have the proper kind of experience. In addition, regardless of technical experience, the framing of scientific and technological problems is something that a non-technical democratic citizen can legitimately engage in. Throughout the science and technology literature, resolution to this problem has been assumed to be found in an appeal to the literature on deliberative democracy. As we saw in Chapter 3, this is true only to the extent that one is aware of the competing visions of the roles of both process and substance in deliberative practices. It was argued it is only the discursive variety of deliberative democracy that can properly account for the role of nonexpert members of democratic societies in science and technology policy. We are thus provided with a normative vision of how to best democratize expertise. This vision provides us with a basis of critique of the existent technology assessment paradigms. With this fully fleshed out

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normative vision that we can use to criticize these existing models, we're now in a position to make better sense out of the deeply flawed ad hoc reactionary science and technology policy that currently exists in the US and Canada. In addition we can make further normative distinctions between the competing models of participatory technology assessment mechanisms currently in use (the variety of technology assessment models currently available in Europe).

The final chapter will explore how best to utilize this normative vision in the current US context given the recent calls for the reinstantation of the OTA.

Chapter 5: Conclusion

This chapter will present a brief summary of the argument thus far and will explore avenues for future research.

This dissertation has presented the case for a normative vision of the relationship between technical experts and other non-expert members of a democratic citizenry. This vision is grounded in two key insights that have emerged from the field of science and technology studies. First, is the "third wave" science studies movement that identifies problems of expertise as the "pressing intellectual problem of the age."[136] Characterized by the problems of legitimacy and extension, Collins and Evans build the case for the extension of the category of expertise to include those who have the relevant experience but lack relevant accreditation. Alongside this extension of the category of expertise is the extension of those who participate in the framing of techno-scientific issues. Here we saw a strong case for the inclusion of all democratic citizens in the problem framing process. What we are left with from the current "third wave" literature is a multi-tiered prescription for the role of non-experts in public decision-making about science and technology. On the ground floor, when the issue is being framed there is a need to include non-expert stakeholders (in theory, any concerned democratic citizen). Once a framing of the problem has been constructed, there is a need to recognize a larger category of people who count as "expert." Together, these constitute the two most powerful prescriptive elements of expertise developed in the recent science studies literature.

The second insight from the science and technology studies literature that grounds the normative project of this dissertation is the appeal to theories of democracy in the STS literature. While this is very closely related to the problem of expertise (in so far as the solution is public

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[136] P. 236Collins, H.M. and Robert Evans. " The Third Wave of Science Studies: Studies in Expertise and Experience." Social Studies of Science. April 2002. 32:235-296.

participation in science and technology decision-making) it deserves attention as a separate issue. This is because while it may be clear, given the concerns that emerge from the third wave science studies literature, that democracy theory has a crucial role to play in fleshing out the normative vision of the technical expert, it is far from clear which particular form of democracy theory is best suited to handle the peculiar normative dimensions of the problem of expertise.

The peculiarities of the problem of expertise involve issues of communication. The problem of extension is characterized by the need for classically accredited technical experts to recognize non-classical, non-accredited (yet nonetheless) expert knowledge in other people. The primary barrier to this is an inability on both the part of the expert and the non-expert to properly communicate their form of knowledge in terms that allow the other to recognize such knowledge as legitimate. The classic story of the Cumbrian sheep farmers, reviewed in chapter 2, is a classic example of this. The problem of framing is likewise an issue of communication. Given the fact that the technical expert is not necessarily in any better position to frame social problems with regard to technology, how ought such problems be framed? How are the "public meanings" that Wynne references or the "civic epistemologies" that Jasanoff references regarding a specific techno-scientific public policy issue to be decided? Through what process do we obtain closure on the framing of a techno-scientific problem? It is clear that some process of deliberative communication is necessary here if we hope to have any actionable problem-framing to work within regarding a specific public policy. Keeping these specific concerns in mind when sifting through the different forms of deliberative democracy provides a useful guide in discerning which form one ought to appeal to when concerned about the issue of technical expertise in a democracy.

In chapter 3 we saw how the current literature on deliberative democracy can be typologized

by reference to a set of central questions regarding the value of deliberation, substance versus process, consensus versus pluralism, scope, and difference. What emerges from this is a far more complicated picture of deliberative democracy than is typically presented in the science studies literature. Many of these questions deal directly with the issues that attracted science studies scholars to the deliberative democracy literature. Thus, where each form of deliberative democracy comes down on these issues is of direct concern for the project of fleshing out the normative dimensions of expertise in a democracy (as described above). We saw in chapter 3 that it was only the discursive brand of deliberative democracy theory that was able to allow for the proper respect for pluralism, the proper scope, and respect for difference that is required by normative dimensions of expertise in the third wave of science studies.

Thus, when science studies scholars make use of deliberative theories of democracy, it is necessary to be aware of these contestations in the deliberative democracy literature. I have in mind here Patrick Hamlett's "Technology Theory and Deliberative Democracy"[137] specifically. Here Hamlett makes the sweeping claim that, "The well-developed literature on deliberative democracy, while emerging from a different scholarly tradition, dovetails with participatory public policy analysis in several ways. This literature proposes normative standards that support real-world practices intended to enhance the degree of public, reasoned, and deliberative participation in making significant policy choices."[138] Hamlett, citing support from an unpublished manuscript by Bijker,[139] goes on to suggest that because of this aim of deliberative democracy literature, there are clear similarities between deliberative democracy and social constructivism. For example, "in deliberative practices groups of individuals move toward general agreement ("closure") about the meanings and significance

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[137] Hamlett, Patrick. Technology "Theory and Deliberative Democracy." Science, Technology, and Human Values, Vol. 28, No. 1. Winter 2003. 112-140.
[138] P. 118. Technology Theory and Deliberative Democracy
[139] http://www.angelfire.com/la/esst/bijker.html

attached to their common lives and endeavors."[140] While it is true that most types of deliberative

democracy can accommodate these ideas, it is far from clear whether a particular brand of deliberative

democracy theory will be able to further accommodate the more specific normative dimensions of

expertise in the third wave of science studies.

   What is needed is a clear indication of what the democratization of expertise ought to look like

before we can say what particular brand of deliberative democracy meshes well with science studies.

Without a clear picture of what expertise ought to look like in democratically decided public policy,

Hamlett and Bijker are able to make these general claims about deliberative democracy and its relation

to social constructivism. While certainly helpful on a conceptual level, these general claims of

association do little in the way of practical guidance. In chapter 2 I provided such a picture of

expertise. With this picture in mind we were then able to sift through the varieties of deliberative

democracy theories to arrive at the version most hospitable to this normative vision of expertise. What

we saw was that, given these prior commitments to this normative vision of expertise, a disagreement-

sensitive theory of deliberative democracy that takes the agonism of democratic deliberation seriously

is the most appropriate brand of deliberative democracy. Other brands of deliberative democracy, such

as the liberal constitutionalist approach and the disagreement-sensitive approaches present real

conceptual barriers to realizing the normative vision of expertise described in chapter 2.

   Armed with both a well-articulated normative vision of expertise and an appropriately specific

form of deliberative democracy, we were then able to turn our attention to the many promissory notes

found in the literature about deliberative democracy's ability to provide support for "real-world

practices intended to enhance the degree of public, reasoned, and deliberative participation in making

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[140] P. 120 Technology Theory and Deliberative Democracy

significant policy choices."[141]

Thus, chapter 4 focused on the practical models for public participation that are currently available. We saw that there are a number of distinct approaches to technology assessment that can be understood in reference to the United States' Office of Technology Assessment (OTA). Borrowing from Eijndhoven,[142] we broke the general development of technology assessment down into four discernible paradigms.[143] The first was the classic technology paradigm which is characterized by the simple goal to acquire objective, neutral information about the secondary impacts of technology so as to make an optimal policy decision regarding the technology. This paradigm was shattered by the introduction of the crisis of legitimacy and is only mentioned here because of its importance to the next paradigm. The subsequent paradigm is what Eijndhoven calls the OTA paradigm. Importantly, from the very beginning the OTA saw itself and was seen by others as an answer to the problems endemic to the classic technology assessment paradigm. Chief among these problems was the fact that technology assessment was not trusted to be impartial, neutral, or objective (the problem of legitimacy). Thus, the OTA model sought out "committee primacy" (direct connection with policy makers), stakeholder involvement (participation by people such as labor unions, environmentalists, business people, etc.), and quality control of the final reports. The important point for us here was that at the very inception of the OTA, the idea that expanding participation in the decision-making process to include non-experts was a key to obtaining legitimacy was already front and center.

The European experiences with the OTA model are telling of the possibilities of such a technology assessment tool to incorporate democratic tendencies. In chapter 4 we saw a brief survey of how these "little OTAs" operated throughout the various European contexts. Generally speaking, we

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[141] Hamlett 118 (quoted earlier)

[142] Eijndhoven, Josee C.M. "Technology Assessment: Product or Process?" *Technological Forecasting and Social Change*. 54, 269-286 (1997).

[143] I'm going to discuss just the first three here. I will return to the fourth paradigm of technology assessment (Constructive Technology Assessment (CTA)) in the "future studies" portion of this chapter.

can see a tendency of these little OTAs to foreground the need for public involvement in the technology assessment process. Thus, Eijndhoven, labels the third paradigm of technology assessment the "public technology assessment" paradigm. Under this paradigm we find modes of public engagement (such as the consensus conference and citizen's jury) that facilitate direct engagement between technical experts and non-experts with, in some places, some, often tenuous, connection to policy outcomes. Under this paradigm we find a further division between what Vig and Paschen call discursive mechanisms for public engagement and instrumental mechanisms for public engagement. As we saw, this tracks nicely Rowe and Frewer's rubric of "public engagement." Rowe and Frewer find at least three different models for incorporating the public into technology assessment. The first of these is what they term the "public communication" model of public engagement. Under this model the public may "participate" by being the "passive recipients of information from the regulators or governing bodies concerned." The second model that is sometimes used under the rubric of "public participation" is what Rowe and Frewer term the "public consultation model."[144] Under this second model the public may "participate" via the solicitation of public opinion via polling[145], surveys, or questionnaires. The third model Rowe identified is what Rowe and Frewer term the "public participation" model of public engagement. It is under this third category of things usually deemed public engagement mechanisms that we find the small number of things that will satisfy the demands of deliberative democracy. Rowe and Frewer characterize this model as one that allows for "active participation of public representatives in the decision-making process itself, such as through lay representation on an advisory committee."[146]

It is to these modes of public engagement with science and technology policy that many have

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[144]P. 254 "A Typology of Mechanisms."

[145]There are some interesting attempts at forming 'deliberative' polls. This usually requires people to do more than simply express a predefined opinion (via the presentation of new information or even online tutorials), however, these efforts require a bilateral dialogue of sorts, and so likely will exist in the third model that Rowe and Frewer identify. More on this can be found at the Center for Deliberative Democracy at Stanford University: http://cdd.stanford.edu/polls/docs/summary/

[146]P. 254 "A Typology of Mechanisms."

pointed when identifying successful models for the democratization of expertise.[147] We are now in a

position to be able to critique this claim. Given the normative project of democratizing expertise as

described in chapter 2 and the appropriately specific form of deliberative democracy described in

chapter 3, we have the normative tools to be able to make sense of this claim against a sufficiently

informed science studies background.

The conceptual tools provided in this dissertation allow for a level of normative specificity

about the inner-workings of public engagement mechanisms that, due to the conceptual confusions

described in chapter 1, has not been available. In chapter 4 we saw the various incarnations of the

consensus conference and the citizen's jury. The subtle differences in how the processes of deliberation

are structured take on new normative dimensions in light of what this dissertation has argued. For

example, some consensus conferences run by the Danish Board of Technology allow those selected to

participate to select the kind of experts that will be called to participate. Other consensus conferences,

more closely related to a particular piece of legislation, have had a set of technical experts picked out

beforehand by the members of the relevant committee in parliament. These experts then go on to

dialogue with the non-expert members of the consensus committee in ways that closely track the

procedural requirements of a deliberative democratic process. This difference in the role of the non-

expert members of the consensus conference in the selection of the experts to be invited to participate

may go unnoticed by those invited to participate. However, we can see that the power to pick the

experts, and thus shape/frame the issue to be discussed in the conference is key for the democratic

legitimacy of the engagement mechanism. This is because discursive democracy requires that issue

framing also be on the deliberative table. This is how discursive democracy breaks the logjam between

the proceduralist/liberal divide. This also, of course, is how discursive democracy accommodates the

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[147] This is common place. I guess I can keep picking on Hamlett and point to page 119 – 121 in his article "Technology Theory and Deliberative Democracy."

normative dimensions of expertise as described in third wave science studies.

If our normative theory of expertise and our appropriately specific form of deliberative democracy (discursive democracy) allow us to make such fine-grained normative distinctions between subtle variations of Dutch-style consensus conferences, we naturally will have a lot to say about the far more obvious differences between the democratic merits of the purely instrumental forms of technology assessment such as those used by OPECST, TAB, POST, and STOA described in chapter 4 and the more participatory discursive mechanisms of the Teknologiradet and the Rathenau Institute.

All of this, however, is overshadowed by the fact that after the demise of the OTA in the United States the problem is far worse than a democratically suboptimal relationship between the public and the technical expert in technology assessment mechanisms. The simple truth is that no such mechanisms even exist in the United States. Sheila Jasanoff's book *The Fifth Branch: Science Advisers as Policymakers* is still basically an accurate description of how technology technical experts influence policy in the United States. Technical experts are called in to provide information in the form of science advisors. There technical recommendations may be taken into account or not by the governing body they are advising. The role of the public in this scenario is, if considered at all, seen as an externality of a purely political nature (e.g., the PUST model). This being said, in a recent article[148] Jasanoff has suggested that while we (the United States) are indeed still entrenched in this antiquated view of technology policy, she is hopeful that some of the changing trends concerning the participation of publics, universities, and experts in science and technology policy may mark what she calls a "constitutional moment" in which the time is ripe for the terms of science and technology governance to be renegotiated. She is especially hopeful about the role of science studies scholars in this new

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[148] Jasanoff, Sheila. 2011. "Constitutional Moments in governing Science and Technology." *Science and Engineering Ethics*. Volume 17, Number 4, 621-638

"constitutional moment."[149] This situation is precisely why so much attention has been paid to the renewed interest in an Office of Technology Assessment in the US.

The popularity of this idea was explored in chapter 4. What is important here is the ways in which this dissertation can provide key insights into how the new OTA might be structured. As demonstrated in chapter 4, there is a vast array of case studies involving the transfer of the OTA model to new contexts to be learned from. In addition, there is a trajectory as seen in Eijndhoven's technology assessment paradigms. There are both practical and moral reasons for moving toward a more participatory model of technology assessment. The practical concerns involve the ability of public participation to lend legitimacy to a policy while the moral concerns our desire to democratize expertise. In his editorial overview for the recent special issue of *Science and Engineering Ethics* titled "Science and Technology Policy in the Making: Observation and Engagement",[150] Erik Fisher makes a similar case for the existence of this trajectory in public participation in technology assessment. He claims that there are discernible trends in the United States marking the "constitutional moment" that Jasanoff points to. He goes on to claim that this latest round of "new governance" discourse in science policy "insinuates more active roles for publics, wider conceptions of who counts as public, earlier participation in policy decisions, and expanded notions of science and technology."[151] While it may not seem practical to suggest that Dutch-styled consensus conferences be implemented in the United States,[152] we need to recognize the value in having a well-articulated vision of what a thoroughly democratic process of technology assessment ought to look like. Only then will we be able to recognize the status quo for what it is. If it is true that the United States is experiencing a

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[149] This, I hope, serves as another demonstration of the importance of this project of this dissertation.

[150] Fisher, Erik. 2011. "Editorial Overview: Public Science and Technology Scholars: Engaging Whom?" *Science and Engineering Ethics* . 17: 607-620.

[151] P. 610 *Ibid.* Throughout this entire special collection the term deliberation is used over 130 times! I'd say a clear normative vision of what constitutes deliberation in a democracy (provided in this dissertation) is quite timely.

[152] Though my pessimism is tempered by the growing number of consensus conferences occurring throughout the world, including the US. The Loka Institute keeps track at: http://www.loka.org/TrackingConsensus.html

"constitutional moment", then this dissertation could not have been better timed.

Future Studies

This section of the chapter will explore the directions in which I might take the ideas presented in this dissertation. First, I hope to be able to use the findings in this dissertation to affect the form and content of future models of public engagement with public policy (especially in the United States and Canada where there are only nascent and still emerging participatory movements that have formal connections to policy.). Second, I see strong connections between what is argued for in this dissertation and the literature on participatory action research (PAR).   I would be interested in exploring the commitments held by various grassroot organizations that organize "citizen juries" or "citizen panels" with no formal connection to policy in an effort to simultaneously articulate, legitimize, and generally lend voice to minority-held views on public issues. Citizens juries provide a unique way of organizing publics in a way that aims at consensus across disparate groups (e.g., the occupy Wall Street movement's "town halls"). Lastly, I would like to explore the connections between what this dissertation has argued about technology policy and what is referred to as "constructive technology assessment (CTA)" in the literature.   This concept of technology assessment attempts to broaden the design of new technology through feedback of assessment activities into the actual construction of technology. Contrary to other forms of technology assessment, CTA is not directed toward influencing regulatory practices by assessing the impacts of technology. Instead, CTA attempts to address social issues around technology by influencing design practices. This different aim of CTA makes me include it in the "future studies" portion of the dissertation. The idea to include people (non-experts as well as experts) not just in the policing of technology via policy creation but in the actual design of the technology seems like an obvious extension of the ideas presented in this dissertation. In what follows

I will briefly discuss each of these three plans for future studies.

The many contestations within the deliberative democracy literature create fertile enough ground to provide ample material for a full dissertation devoted solely to the issue of mapping different kinds of deliberative democracy. This is evidenced by the many books from the secondary literature on deliberative democracy referenced in this dissertation. I did not want to write a dissertation solely on democracy theory, however. Instead, I wanted to write on the relationship between dominant visions of democracy and practical modes of engagement of the public with science and technology policy. This, as I hope to have demonstrated above, is very much a live issue in modern industrial democracies. Thus, I hope to be able to use the findings in this dissertation in the future to influence the form and content of future models of public engagement (especially in the United States and Canada where there are only nascent and still emerging participatory movements that have connections to policy.). It is my hope that this dissertation might read like a white paper that a government official might find useful. What might such a future project look like?

As an example of how the ideas in this dissertation might be applied to future models of engagement I would like to briefly discuss Richard Sclove's *Reinventing Technology Assessment: A 21st Century Model* published by the Woodrow Wilson International Center for Scholars. This report has garnered a lot of attention for clearly laying out a number of practical recommendations for the new instantiation of the OTA in the United States. Sclove explores two potential options for a 21st century technology assessment in the United States. He first explores what he calls the "congressional" option. This option suggests explores the possibilities of establishing a new congressional agency just as the old OTA, or establishing a new technology assessment capability within an existing agency such as the Government Accountability Office (GAO). The second option Sclove explores is an institutional

network called Expert and Citizen Assessment of Science and Technology (ECAST) which would be independent of the government and comprise a complementary set of non-partisan policy research institutions, universities and science museums across the United States.

Each option has strengths and weaknesses. In chapter 4 we saw how the success of technology assessment models is often correlated with how close the ties are between government agencies and the assessment organization. Having the new OTA enjoy a direct and formal relationship with congress would automatically confer public stature and a measure of influence upon the practice of TA at the national level. However, the staff of any new congressional OTA will be acutely aware of the demise of the previous OTA, and so is apt to be highly cautious and risk-averse. This could make it difficult to implement the experimentation, trial-and-error learning and innovation necessary to instantiate the new methods of public participation in current models of public participation. Thus, Sclove argues that the ECAST model would be best suited to accommodate the new technology assessment needs in the 21st century. The network of academia, policy research institutions, science museums, etc. provides an opportunity to experiment with these new forms of democratic technology assessment. This will require exploring what allows democratically meritorious technology assessment models to work in some cases and not others, explore pathways to democratic participation in other contexts, and identify potential roadblocks to it in US. These are all fertile grounds for future study that would complement what has been argued in this dissertation well. This dissertation, as I have foregrounded since the beginning, provides an ideal, a vision of what we mean when we say we want to democratize science and technology policy. The radical differences between, say, how democracy is understood in the Netherlands versus how it is understood in Virginia of course play a large part in how one ought to operationalize the ideas argued for in this dissertation. I would be interested in exploring how local context shapes the understanding of the democratic ideals described in this dissertation. Sclove's idea

of a decentralized extended network of various participatory assessment strategies seems to me to be a great way of dealing with the complexities of local context while aiming for a more democratic society.

The second area I see this dissertation being applied to is the participatory action research literature (and practice). The discursive brand of deliberative democracy described herein and the normative vision of how the non-expert citizen ought to be empowered to participate in techno-scientific decision-making together provide a sharp critical tool for community organizing. We mentioned briefly the epistemic arguments for deliberative democracy in chapter 3. It is worth looking briefly at them again here. One argument for deliberative democracy (generally speaking now) suggests that it is to be valued because of the quality of the outcome of the process. Since the process and substance of a deliberative practice are structured the way they are, the outcome is granted a kind of epistemic privilege. This epistemic privilege can reflect democratic legitimacy as well as an epistemic legitimacy. Think, for example, of a group of concerned citizens who want their congress to act concerning CO2 emissions. They may pass around a petition and then present the signatures to their congressman (an aggregative democratic procedure – see chapter 1) or they may organize their own citizen's jury. Using the discursive deliberative democracy approaches described in this dissertation alongside the normative vision of expertise offered in this dissertation can lend the outcome of the citizen's jury a kind of epistemic and democratic legitimacy unobtainable from a simple aggregative democratic process such as collecting signatures.

There are a number of organizations that foster these kinds of "citizen's juries" or "citizen's panels" with an eye toward legitimizing grassroot movements.[153] This kind of participatory action research appeals to me and stands as a likely necessary course of action for a number of contemporary issues. The inability of governments to properly respond to global warming is, perhaps, the most

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[153] For example, The Jefferson Center for New Democratic Processes (http://www.jefferson-center.org/) , the PEALS Center in the UK (http://www.ncl.ac.uk/peals/dialogues/juries.htm), Excluded Voices (http://www.excludedvoices.org/)

obvious.

Finally, I see clear connections between what I have argued in this dissertation and the rapidly growing literature (and practices) of constructive technology assessment (CTA).[154] The basic idea behind CTA is a move beyond assessing anticipated impacts of a technology to actively involving the public in shaping the technology in ways that seek to accommodate the anticipated impacts (whether good or bad). This model originated in the Netherlands and was articulated within the Rathanau Institute. The idea was that instead of reacting to social implications of new technologies, these implications can be assessed during the design process and incorporated into the final product.[155] This type of technology assessment is, rightfully so as I see it, often criticized for being a form of "enlightened management." That is, CTA is often seen as simply another way of collecting information about potential market segments or demographics. Under the guise of democratic participation lives an old-fashioned desire to turn a buck. Of course, if, as seems to have been the case in the Netherlands and Denmark in the late 1980s and early 1990s, the population is interested in sustainable, environmentally friendly technologies and willing to actively participate in the design and implementation of these new technologies, then this form of technology assessment can function quite well with desirable outcomes for both society and industry.

The form of deliberative democracy argued for in this dissertation can provide some insight into how we might better understand what a properly *democratically* creative technology assessment might look like. It seems to me that the sharpness of the criticisms leveled against the CTA might be somewhat dulled by an effort to get more specific about how the interface between industry and society

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[154] As promised in footnote 8, Eijndhoven's fourth paradigm of technology assessment paradigms.
[155] See Schot, Johan and Arie Rip. "The Past and Future of Constructive Technology Assessment." *Technological Forecasting and Social Change*. 54, 251-268 (1996). This is a oft-quoted piece that explains the origins of CTA and provides a number of useful examples.

might be structured so as to emphasize the democratic goals of such an exchange as well as the

financial.

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