Green Visions and Democratic Constraints

The Possibility and Design of Democratic Institutions for Environmental Decision-making

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(Revised Edition)

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DECLARATION

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ABSTRACT

This thesis addresses a recurrent question of our time – whether democracy can secure environmental sustainability – by drawing on literatures in the normative theory of democracy, social choice theory and environmental politics. I propose a basic, yet substantial organising principle, the 'dilemma of green democracy', which maps out the possibility of realising green outcomes under democratic constraints. Interdisciplinary ideas from neighbouring disciplines are also imported for the purpose of studying the design of good environmental-democratic institutions. The analytical framework is an integrated one, comprising formal choice theory and normative democratic theory.

The first part of the thesis focuses on the possibility of environmental-democratic institutions. Chapter 1 introduces the dilemma of green democracy – a conflict between three plausible desiderata for environmental democracy – and suggests several proposals for avoiding the dilemma. It concludes that, as long as the dilemma is resolved, it is logically possible to construct environmental-democratic institutions. Chapters 2, 3 and 4 assess the desirability of the different proposals in terms of procedure and outcome. The general conclusion is that whether these proposals are desirable depends on a number of conditions and/or contextual factors.

The second part of the thesis examines the substantive issues in designing environmental-democratic institutions. Chapter 5 discusses how the discursive dilemma in social choice theory and the normative ends of deliberation constrain the inputs of such institutions. Chapter 6 demonstrates how the concept of distributed cognition, drawn from cognitive/computer science, reconciles the tension between technocracy and democracy. Chapter 7 suggests how the theory of cognitive dissonance, drawn from psychology, challenges the epistemic performance of practicable (environmental-) deliberative-democratic institutions.

The overall conclusion is two-fold. First, democracy can, at least in principle, secure environmental sustainability, provided that the dilemma of green democracy is resolved. Second, interdisciplinary ideas are useful for designing good democratic institutions for collective environmental decision-making. This conclusion has implications not only for intellectual enquiry, but also for institutional design in practice.

To my family, Louis, Lisa and David Wong

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As the marathon of the London Olympic Games is about to begin, I am reaching the finish line of this intellectual marathon. It has been a long journey, and at some point it became harder than anticipated. Despite the hurdles, I feel truly blessed that, in these 1,800 days, I was never left to run alone.

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PREFACE

This thesis addresses a recurrent question of our time: can democracy secure environmental sustainability? The question is *relevant* insofar as we value both democracy and the environment; the question is *pressing* since democratic decisions can sometimes be detrimental to the environment – a problem we are all too familiar with. The seven chapters of this thesis approach this issue from the perspective of political theory. I will argue that, subject to certain constraints, it is possible for democracy to secure environmental sustainability. In particular, I will draw on interdisciplinary ideas to suggest that we can construct desirable democratic institutions for collective environmental decision-making.

The first chapter opens up the discussion with a key argument of the thesis, i.e., that of the 'dilemma of green democracy'. This dilemma posits that there is no logical or unconditional relationship between democratic decisions and environmental sustainability. More specifically, three plausible conditions for collective environmental decision-making – robustness to pluralism, consensus preservation and green outcomes – are mutually inconsistent, meaning that they cannot be satisfied simultaneously.[1] To construct a logically possible environmental-democratic institution, it is necessary that we avoid the dilemma by relaxing at least one of the conditions. I identify a number of escape routes from the dilemma, and introduce each proposal by drawing on literatures from democratic/political theory and empirical examples in environmental politics. Overall, the dilemma of green democracy serves as an organising principle for the subsequent chapters in Part I, where these proposals will be examined in detail.

In Chapter 2, I focus on two proposals according to which the *input requirement* on a democratic procedure (robustness to pluralism) is relaxed, namely exogenous and endogenous domain restrictions (also known as 'eco-filtering' and 'eco-transformation', respectively). I discuss, from the perspectives of procedure and outcome, whether both proposals are desirable in terms of democratic inclusiveness and the generation of green outcomes. I find that both proposals produce green collective decisions only if we ensure that green opinions are available in the first place. Besides, eco-transformation is more inclusive than eco-filtering, and the

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[1] This dilemma mirrors the 'democratic trilemma' introduced by List (2011c). See Chapter 1 for details.

inclusiveness of the former depends on the aggregation procedure used, as well as on the type of decision agenda in question.

Chapter 3 proceeds to examine five proposals according to which the *responsiveness requirement* on a democratic procedure (consensus preservation) is relaxed. These proposals include eco-authoritarianism, eco-technocracy, eco-libertarianism, substantive environmental rights and procedural environmental rights. I assess, from the perspectives of procedure and outcome, whether these proposals are normatively desirable in terms of equality in democratic responsiveness and the generation of green outcomes. In addition, I ask whether they are practically feasible in the real world. I conclude that, from the angle of participation, eco-authoritarianism, eco-technocracy and eco-libertarianism are less democratic than substantive and procedural environmental rights, whereas from the angle of producing green outcomes, eco-authoritarianism and substantive environmental rights are more attractive. As for the practical feasibility of these proposals, this depends on a number of contextual factors.

In Chapter 4, I discuss the remaining two proposals, according to which the *output requirement* on a democratic procedure (green outcomes) is relaxed, i.e., pragmatic (green) democracy and probabilistic green democracy. I first evaluate, from the perspective of procedure, whether both proposals are desirable in terms of democratic inclusiveness and equality in democratic responsiveness. Then, I assess, from the perspective of outcome, whether these are desirable on the basis of the celebrated Condorcet jury theorem. I find that whether both proposals are procedurally appealing depends much on circumstances, and that whether they generate green or correct decisions depends on whether certain conditions of the Condorcet jury theorem are fulfilled.

Part I concludes that democracy can, at least in principle, secure environmental sustainability, provided that the dilemma of green democracy is resolved. So, environmental-democratic institutions are *logically* possible. This constitutes a concrete foundation for looking into *how* we can design *good* environmental-democratic institutions, which is explored in Part II of the thesis. All three chapters in Part II address some substantive issues of institutional design inspired by ideas drawn from social choice theory and other disciplines outside political theory.

In Chapter 5, I discuss how the normative ends of deliberation and the discursive dilemma constrain the input condition of (environmental-) deliberative-

democratic institutions. In particular, I consider a theoretical challenge, called the 'discursive dilemma', for democratic institutions with deliberation and post-deliberation aggregation, or 'deliberation-then-aggregation' (DTA) institutions. I offer a critique of the normative ends of deliberation proposed by Dryzek and Niemeyer (2006/2007), i.e., meta-consensus and inter-subjective rationality, which specify when deliberation should terminate and proceed to aggregation. I argue that the two deliberative ends pave the way for the discursive dilemma in the post-deliberation aggregation, and that this can produce unstable collective decisions on agendas with multiple interconnected propositions. Having said this, the problem can be avoided if we redefine the notion of meta-consensus in a more stringent manner, which would, however, further constrain the diversity of admissible inputs for post-deliberation aggregation.

In the remaining two chapters, I consider some ideas from cognitive/computer science and psychology and demonstrate how these offer insights into designing desirable environmental-democratic institutions. In Chapter 6, I discuss how we may make use of the concept of distributed cognition in order to reconcile the perennial tension between two prominent positions in collective environmental decision-making, namely technocracy and democracy. I show that this reconciliation is possible by means of modifying the responsiveness condition of a democratic institution such that its decision mechanism is a kind of 'distributed premise-based procedure'. Such a modified (DTA) institution, or Specialist Environmental Democracy (SED), is an example of a good environmental-democratic institution which balances epistemic performance and procedural fairness, i.e., the two desiderata emphasised by technocracy and democracy, respectively.

Chapter 7 focuses on the output condition of (environmental-) deliberative-democratic institutions and discusses how the theory of cognitive dissonance is relevant to designing these institutions. I show that cognitive dissonance can undermine the epistemic quality of deliberative decisions if individuals are required to decide whether or not to adjust their behaviour. Such a problem can easily arise for DTA institutions employing Goodin's (2003) 'internal-reflective' deliberation followed immediately by aggregation. This reveals the tension between several desiderata for a good (environmental-) deliberative-democratic institution, and hence the necessary trade-offs we have to make in order to design practicable democratic institutions for collective (environmental) decision-making.

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│   Dilemma of Green Democracy        │
│         (Chapter 1)                 │
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PART I: Possibility of Environmental-democratic Institutions	PART II: Design of Environmental-democratic Institutions
Input Condition: Relaxing Robustness to Pluralism (Chapter 2)	**Input Condition:** Discursive Dilemma and Deliberative Ends (Chapter 5)
Responsiveness Condition: Relaxing Consensus Preservation (Chapter 3)	**Responsiveness Condition:** Distributed Cognition and 'Technocratic-Democratic' Divide (Chapter 6)
Output Condition: Relaxing Green Outcomes (Chapter 4)	**Output Condition:** Cognitive Dissonance and Deliberative-democratic Institutions (Chapter 7)

Figure 0.1: Overview of the thesis

Figure 0.1 shows the overall structure of this thesis. As mentioned, Chapter 1 outlines the dilemma of green democracy – a key argument of the thesis and the organising principle for the subsequent chapters in Part I. Chapters 2, 3 and 4 can be seen as stand-alone chapters, since they examine the normative desirability (and practical applicability) of different proposals in which various conditions are relaxed. However, they are in some sense connected, because they all demonstrate how it is possible to construct environmental-democratic institutions. The three chapters in Part II are also connected to the previous chapters. The arguments of all three chapters are based on the assumption that the condition of green outcomes is relaxed from the dilemma of green democracy, as discussed in Chapters 1 and 4. Moreover, Chapters 5, 6 and 7 are related to Chapters 2, 3 and 4, respectively, in the sense that they focus on similar requirements on a democratic institution (i.e., input, responsiveness and output, respectively). At the same time, Chapters 5, 6 and 7 are also independent chapters, since they deal with stand-alone issues concerning the substantive design of environmental-democratic institutions.

PART I

THE POSSIBILITY OF ENVIRONMENTAL-DEMOCRATIC INSTITUTIONS

CHAPTER 1

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A DILEMMA OF GREEN DEMOCRACY

Any customer can have a car painted any colour that he wants so long as it is black.

– Henry Ford[2]

Can democratic decision-making secure environmental sustainability? This question matters because of the importance we attach to both democracy and environmental protection. An influential view from green political theory holds that democracy is good for the environment. Following a relatively brief period in the 1970s in which the opposite view was prominent (e.g., Hardin, 1968; Heilbroner, 1974; Ophuls, 1977), "today we find almost no one who identifies their own [green political] theory as anti-democratic" (Meyer, 2006, p. 783). Since the 1980s, a new idea, 'green democracy', or its variants such as 'environmental democracy', 'ecological democracy' and 'biocracy', has emerged to capture the purported positive relationship between democracy and the environment (e.g., Paehlke, 1995; Dobson, 1996a; Eckersley, 1996; Jacobs, 1997; Dryzek, 2000; Ball, 2006).

Green democracy is intended to be the marriage of democracy and environmentalism and, if successful, provides a strong justification for relying on democratic decision-making to protect the environment, and even for trying to address some of the world's environmental problems through democratisation. But is green democracy a plausible idea? And how exactly should we understand the relationship between democracy and environmental sustainability?

In this chapter, I want to draw attention to some basic, yet under-appreciated conceptual difficulties in linking democratic decisions with green outcomes. I argue that, if there is any relationship at all between the two, it is not a logical and unconditional one, but at most a contingent and highly conditional one, which relies on a number of additional constraints and assumptions that cannot be supposed to apply in general. Acknowledging these difficulties, I suggest, enables us to come to a

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[2] This remark was made about the Model T in 1909. See Ford (1922), *My Life and Work*, pp. 71-72.

better understanding of what green democrats must show in order to defend and substantiate their view, and more importantly, in what ways we can secure environmental sustainability through democratic decision-making.[3]

Although I use some simple axiomatic arguments to highlight a dilemma of green democracy, the contribution of this chapter lies not so much in these arguments – indeed, I have chosen the simplest arguments in order to make my point – but rather in their use to map out, and critically review, the recent debate on green democracy. This in turn illustrates the necessary trade-offs in designing democratic institutions for environmental decision-making more generally. The present enterprise of mapping out the logical space of possible positions on green democracy follows the template of the 'democratic trilemma', as introduced by List (2011c).

1.1 Origin of the problem

The idea of green democracy goes back to the 1970s, when a list of environmental phenomena such as pollution, exhaustion of natural resources and overpopulation were first perceived as problems at the collective level. A triggering point was the 'limit to growth' thesis introduced by the Club of Rome in 1972. This thesis contends that the exponential growth of economic activities will bring about environmental costs that the Earth can soon no longer bear, and that hitting this ceiling is a recipe for global disaster. As a response, there emerged a discourse – survivalism – which attempted to stop humans from taking the fast track to devastation (Dryzek, 2005). It insisted that democratic decision-making systems lack the required incentive structure for anyone to voluntarily submit to measures that will tackle the environmental crisis (Dobson, 2007). Instead, an authoritarian system devised by experts and professionals that imposed strong and drastic governmental control on human activities would be the only effective way out (Heilbroner, 1974; Ophuls, 1977; see also the discussion in Section 1.4).

Green democracy disagrees with the authoritarian position based on survivalism.[4] As environmental concerns became more influential in shaping the

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[3] As I shall discuss in the next section, previous controversies over green democracy focus mainly on the tension between democratic *means* and environmental *ends*, as well as on which of these should prevail in case of conflict. This overlooks the possibility of reconciling the tension in some alternative way to simply a hard choice between democratic means and environmental ends.

political agenda from the 1980s, there emerged a more optimistic view of resolving the 'tragedy' through democracy. Various social movements on environmental issues which began to take hold in real-world democratic states opened up an opportunity for political parties to dedicate themselves to the environment. These green political parties developed gradually, from national to regional and local levels (Eckersley, 2006). They upheld similar political principles, which could often be generalised within the 'four pillars' of green politics, namely ecological responsibility, grassroots democracy, social justice and non-violence.[5]

Among these pillars, ecological responsibility is the declared goal of these political parties. On the other hand, grassroots democracy can be considered a means of pursuing the goal of ecological responsibility. The real-world attempt of green politics to tie ecological responsibility to (grassroots) democracy provides an excellent context for the idea of green democracy to flourish within green political theory.

Ecological responsibility can be understood as founded on the principle of environmental sustainability (or sustainable development). The principle suggests that, if the environment is to sustain over time, then development in human society – economic, social or political – has to be constrained (Carter, 2007). Generally speaking, such constraint requires that any development which meets the needs of the present humans should not undermine the possibility for future generations to satisfy their own needs.[6] The specific requirements of the constraint depend on the substantive interpretation of environmental sustainability which remains essentially contestable.[7] Having said that, the principle spells out a general concern of the green,

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[4] An opposing view to survivalism was the Promethean response. This views the environmental situations far more optimistically than survivalism, contending that humans are able to offer solutions to various environmental problems through the development of technologies and social organisations in markets. For more detailed discussion, see Simon and Kahn (1998); Easterbrook (1998); Ehrlich and Ehrlich (1998); Dryzek (2005), pp. 51-72.

[5] The 'four pillars' were set out by the 1983 political programme of the German Green party, *Die Grünen*.

[6] This represents a broad definition of sustainable development from the Brundtland Report in 1987 which has, since then, been widely accepted: "Humanity has the ability to make development sustainable – to ensure that it meets the needs of the present without compromising the ability of future generations to meet their own needs" (WCED, 1987, p. 8).

[7] For example, Baker (2006) identifies four different forms of sustainable development which can be arranged in a 'ladder' – with the ideal model at the top, the pollution control approach at the bottom, and the strong and the weak conceptions of sustainable development in between. Each rung of the 'ladder' is associated with different political scenarios, policy implications as well as philosophical beliefs. See also Carter (2007), pp. 213-216.

which is to ensure a certain quality of the environment for a certain period of time into the future.

Taking environmental sustainability as a starting point, green democracy can be regarded as a predominantly normative idea which seeks to establish a link between green concerns and democracy, the latter being a classic concept in normative political theory (e.g., Doberty and de Geus, 1996). Some recent research has also expanded the discussion of green democracy to cover enquiries into how this could be realised in the empirical arena (e.g., Mason, 1999; Mitchell, 2006a, 2006b).[8] If these projects are successful, they will not only demonstrate the practicability of green democracy, but also provide reassurance that we need not sacrifice democracy in exchange for an effective solution to the environmental crisis. In other words, contrary to what survivalists believe, there is no conflict between democracy and environmental sustainability, and "you can have your cake and eat it".

The means-ends debate

The idea of green democracy is, however, not without controversy. It is not difficult to imagine a situation where democracy fails to deliver outcomes which are pro-environmental. Carter (2007) gives us a straightforward example: on the one hand, "most experts agree that climate change prevention requires tough restrictions in car use and high petrol taxes". On the other hand, it is possible, or even likely, that "governments are reluctant to implement such unpopular policies because an angry electorate might vote them out of office" (Carter, 2007, pp. 53-54). In what way, then, can we substantiate the idea of green democracy?

Goodin (1992) offers a classic critique of the connection between the means of (grassroots) democracy and the ends of environmentalism. He contrasts two strands of green political theory, i.e., green theory of value and green theory of agency. The former represents a unified moral position of the greens which "tells us what things are of value and why", whereas the latter "advises on how to go about pursuing those [green] values" (Goodin, 1992, p. 15). Broadly conceived, environmentalism and democracy are examples of, respectively, a green theory of value and a green theory of agency.

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[8] On the theory side, there are also discussions about the sites of its application which include civil society (Dryzek, 2000; 2003), the state (Eckersley, 2004), outside the state (Luke, 1999), as well as the global level (Holden, 2002).

More generally, while theories of value focus on the values themselves as well as on the outcomes, theories of agency concern actions, choices and the mechanisms which produce these actions and choices (Goodin, 1992, p. 115). Goodin contends that the two theories should be regarded as separate since they are not only logically separable but also supported by genuinely different arguments (Goodin, 1992, p. 119). If two theories are independent in this manner, it is hard to ensure that the means based on one would in fact serve the ends specified by the other (Goodin, 1992, p. 168). By the same token, the relationship between democracy and environmentalism is problematic because:

> "To advocate democracy is to advocate procedures, to advocate environmentalism is to advocate substantive outcomes: what guarantee can we have that the former procedures will yield the latter sorts of outcomes?" (Goodin, 1992, p. 168)

Saward (1993) also highlights a similar tension. He asserts that:

> "[G]reen democracy seeks to define and enact a broad conception of the good to which individuals must conform. If democracy is understood as responsive rule …, meaning that rulers are responsive to the felt wishes of (a majority of) citizens, then there is a natural compatibility … which does not obtain between ecologism and democracy." (pp. 68-69)

As a result, "[i]f governments, to be democratic, must respond to the felt wishes of a majority of citizens, then greens have little comeback if a majority does not want green outcomes" (Saward, 1996, p. 93). This echoes the speculation, as in Carter's (2007) example above, that government is reluctant to implement unpopular policy in order to achieve pro-environmental objectives. If such a view is correct, then there is a tension between democratic means and environmental ends.[9]

How could we resolve such a tension between means and ends? Goodin (1992) suggests that we should prioritise environmental ends over democratic means. Because of the logical primitive in the moral system of green thinking, "it is more important that the right things be done than that they be done in any particular way or through any particular agency" (p. 120). In other words, it matters more that the

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[9] See also Doherty and de Geus (1996), pp. 8-9; and Ball (2006), pp. 132-134.

designated environmental ends can be achieved than that they are achieved through democratic means. Environmental ends, therefore, justify whatever means are necessary, be these democratic or not, as long as the means in question bring about the environmental ends.

If it so happens that only non-democratic means can produce environmental ends, then, according to Goodin, democracy may be sacrificed to pro-environmental outcomes. This argument appears vulnerable to the risk of green democracy degenerating into some kind of authoritarian procedure (Saward, 1993).[10] As Dobson (1996a) argues:

> "If the green theory of value and green theories of agency really are separate, and if the former is so overridingly important, then it can be made to sound as though any theory of agency – again, even (or perhaps especially) an authoritarian one – will do as long as it brings about the desired end …" (p. 133)

Is the means-ends tension as simple as an 'either-or' constraint, in which, as Goodin insists, one can be entirely sacrificed to the other? Eckersley (1996) argues against Goodin that democratic means are at least as important as environmental ends. This is because democracy and environmental sustainability are both necessary conditions for humans to exercise their autonomy to flourish. If moral priority is given to autonomy as such, then democratic means should not be traded for environmental ends, since a non-democratic or authoritarian procedure would "fundamentally [infringe] the rights of humans to choose their own destiny" (Eckersley, 1996, p. 223).

Saward (1996) acknowledges the possibility of building environmental considerations into democratic procedures through the stipulation of environmental rights. He contends that "[c]onsistent democrats will want to prevent environmental harm to citizens, and will recognise a green democratic right to that effect" (Saward, 1996, p. 88). In this way, "[t]he idea that democracy is a means, and environmentalism an end, breaks down; environmental goals become an integral part of democratic means to democratic ends" (Saward, 1996, p. 88).

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[10] See also the discussion on eco-authoritarianism and eco-technocracy in Section 1.4 and Chapter 3.

If Saward and Eckersley are both correct, then environmental ends and democratic means need to be made compatible with each other. This is all the more pressing since, as Carter's (2007) example above highlights, a tension does exist between democracy and environmental outcomes and this threatens the very foundation of green democracy. To achieve a reconciliation, one starting point is to map out the 'logical space' of green democracy and to identify the minimal conditions which are necessary for democracy and environmental sustainability to co-exist.[11]

1.2   A conceptual dilemma

A group of individuals (e.g., citizens) is faced with a collective choice between certain alternatives. Call the set of alternatives *X*. To keep things simple, I assume that only some (not all) of the alternatives, say those in a proper subset *Y* of *X*, are environmentally sustainable, or 'green'.[12] Each individual has an opinion as to which alternative should be chosen.[13] We are looking for a decision procedure which assigns to each combination of individual opinions a resulting collective choice. Notice that this is a very broad notion: it may include, but need not be restricted to, a voting procedure. Even an extensive deliberative process can count as a decision procedure in the present sense, insofar as it eventually generates a collective choice on the basis of individual inputs (Figure 1.1).[14]

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[11] See List (2011c) for a defence of methodology.

[12] At first sight, it might remain difficult to decide what alternatives *should* be regarded as 'green', since the meaning of environmental sustainability, as mentioned earlier, remains essentially contestable. However, such issue is irrelevant for the purpose of developing the present argument. As we shall see below, the conceptual dilemma is a *formal* argument which can accommodate *any* conception of green alternatives on the basis of different *substantive* interpretations of environmental sustainability. In other words, it is not necessary that we specify what exactly count(s) as a green alternative; we, instead, need only to assume that *some* alternatives are green while *some* others are not.

[13] More generally, each individual could have a preference ordering over the alternatives, but this assumption is not needed for the most basic exposition of the problem.

[14] See Chapter 5 on how deliberation and voting may together serve as a single decision-making procedure.

Individual opinions

Decision procedure
(e.g., voting; deliberation)

Collective choice
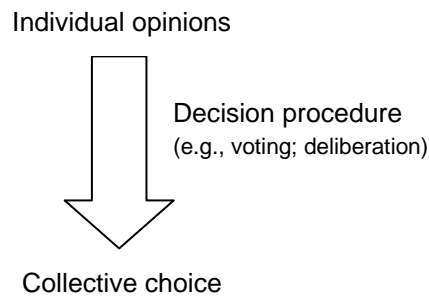
Figure 1.1: Decision procedure

Can we find a decision procedure that would satisfy a green democrat? At first sight, the following might seem to be the minimal requirements for green democracy:

Robustness to pluralism: The decision procedure is able to cope with conditions of pluralism: it accepts as input any logically possible combination of individual opinions on the alternatives in X.[15]

Consensus preservation: The decision procedure exhibits at least a minimal level of democratic responsiveness, in that, if all individuals support the same alternative, this alternative is collectively chosen.[16]

Green outcomes: The decision procedure always generates a green outcome, in that the chosen alternative is in Y.[17]

The dilemma of green democracy: There exists no decision procedure that meets the three requirements at once.

This result mirrors the 'democratic trilemma' introduced by List (2011c), a related conflict between the requirements of robustness to pluralism, basic majoritarianism and collective rationality.

Why does the present dilemma arise? The mechanism behind the conflict between the three requirements is extremely simple. Assume, for a contradiction, that there *is* some decision procedure that meets the three requirements together. What follows from this? Because the procedure is robust to pluralism, it will produce a

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[15] This requirement is a version of the universal-domain condition in social choice theory. Its interpretation as a condition of robustness to pluralism comes from List (2011c).

[16] This requirement is, in essence, a version of the Pareto principle.

[17] This requirement is a substantive outcome constraint, which does not yet exist in this precise form in the existing literature.

well-defined outcome for any combination of individual opinions. Now consider a situation in which all individuals unanimously support one of the non-green alternatives (that is, an alternative outside the green subset *Y*). By consensus preservation, this unanimously supported alternative must be collectively chosen. But this violates the requirement of green outcomes, which contradicts the assumption that our procedure meets all three requirements.[18]

We must conclude that, at least in strictly logical terms, at most two of the three requirements can be met at once. This raises the obvious question of which requirement to relax, and how exactly to relax it. I suggest that the present problem allows us to map out, and critically assess, different approaches to green democracy. This dilemma also generalises the previous observations about the tension between democracy and environmental sustainability as in the means-ends debate.[19]

1.3 How to avoid the dilemma I: Relaxing robustness to pluralism

I have, so far, demanded that green democracy operates under the condition of pluralism, with potentially diverse and conflicting individual opinions. This condition is not only a normative desideratum but also responds to an important empirical fact, i.e., the fact of pluralism. After all, people disagree about the world as a result of having different desires and beliefs that shape their opinions. There is no reason for environmental problems to be immune to pluralism. On the contrary, as Smith (2003) acknowledges, "value conflict is at the heart of environmental politics" (p. 1).

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[18] Note that the dilemma of green democracy is a *formal* argument which does not depend on any *substantive* conception of environmental sustainability. For instance, a particular alternative, *Z*, may no longer be considered green as the conceptions of environmental sustainability that we base on change from one to another (e.g., from weaker to stronger). Nevertheless, this fact alone does not affect the quality of the argument, as long as there is/are some alternative(s) other than *Z* which can be regarded as green according to the given conception of environmental sustainability. In other words, if it is true, as assumed, that, regardless of the substantive conceptions of environmental sustainability, *some* alternatives are green whilst others are not, then the dilemma of green democracy stands since it remains possible that all individuals support a non-green alternative.

[19] Although the dilemma of green democracy does not assume any substantive conceptions of environmental sustainability, the latter may still have implications for determining which of the three requirements should be relaxed in order to avoid the dilemma. However, this issue is beyond the scope of the thesis, since my emphasis here is on the *formal* relationship between democracy and environmental sustainability rather than the *substantive* interpretations of either concept.

At first sight, the condition of robustness to pluralism seems hard to relax. However, under different circumstances there may be different levels of pluralism. For example, for groups or societies which are internally cohesive, individual opinions may be more or less homogeneous; or, even if there are divergent opinions, there may be democratic mechanisms which reduce the scope and level of disagreement. In these cases, the decision procedure may only need to cope with a restricted level of pluralism or, more technically, with a restricted domain of inputs. Below I discuss two major approaches to domain restrictions, following List (2011c) in distinguishing between exogenous and endogenous approaches.

Proposal 1: Exogenous domain restrictions
This approach 'filters out' or rejects any inputs that fail to meet certain conditions, such as being sufficiently green-minded, from inclusion in the democratic process. More formally, any individual opinions in support of alternatives that do not fall into the subset of green outcomes, *Y*, are exogenously barred from admission to the decision procedure. In this way, green democracy does not consider any inputs which are, or can be read as, contrary to, or inconsistent with environmental sustainability.

One justification for exogenous domain restrictions, or 'eco-filtering', is that green opinions *should* in principle be prioritised, based on certain normative theories in environmental ethics such as eco-centrism (e.g., Leopold, 1949; Naess, 1989) and ethical extensionism (e.g., Singer, 1976; Norton, 1991). Eco-centrism, where humans are subject to part of the eco-system, argues that the environment is intrinsically valuable. Ethical extensionism argues that non-human entities should be regarded, alongside humans, as moral beings.

For example, Arne Naess (1989) advocates the view that "the flourishing of human and non-human life on Earth has intrinsic value", and hence that both entities should have "the equal right to live and blossom" (p. 29). Similarly, Peter Singer (1974) argues that sentient beings, such as animals, with "the capacity for suffering and enjoying things" have interests which deserve equal consideration with those of humans (p. 175). On the basis of these normative theories, eco-filtering may be introduced in order to rule out any inputs which are contrary to the relevant normative requirements.

It is easy to see how eco-filtering circumvents the dilemma of green democracy. Suppose there is a mixture of individual opinions, green and non-green. On adopting

eco-filtering, only the green opinions are accepted as admissible inputs to the decision procedure whereas those of the non-green are set aside. Thus all the inputs that the decision procedure has to cope with are green. As long as the procedure picks one of these options (such as the majority or plurality winner among the green options) as the collective choice, the condition of green outcomes will be satisfied.

While eco-filtering can effectively bring about green outcomes without compromising on consensus preservation, this approach is vulnerable to two criticisms. First, it is possible for the decision procedure so formulated to degenerate into a virtually undemocratic procedure. Consider a situation in which there is a strict majority of individuals in the group (e.g., 80%) who personally prefer the non-green alternative, compared to the minority (e.g., 20%) who prefer the green. The procedure we have constructed would need to disenfranchise the 80% non-green-minded individuals *unless* they are willing to change their votes to green. This, in effect, ensures that a minority choice prevails, which is a seemingly undemocratic outcome.

Second, eco-filtering reduces green democracy from a decision-making procedure to a purely ethical position of the green-minded. Given consensus preservation, in order for green democracy to work, the domains have to be restricted in such a way that the admissible inputs are identical to the green outcomes. This renders green democracy a trivial idea, since collective decisions are always a corollary of the condition of green outcomes instead of depending on the contingent combination of individual opinions. Green democracy is hence reducible to the condition that collective decisions *should* be green under *all* circumstances. Although, in this sense, green democracy may be morally justifiable, the decision procedure is no longer sensitive to the plurality of relevant values. As Smith (2003) points out:

> "Environmental ethics evades the fundamental task of offering insights into how we are to mediate between the plethora of environmental and non-environmental values … There is a diversity of values … that we appeal to in making judgment. Value pluralism does not banish disagreement and conflict through the creation of a sophisticated theoretical framework [such as environmental ethics]." (p. 27)

Proposal 2: Endogenous domain restrictions

While restricting the domain of admissible individual opinions exogenously is sufficient for avoiding the dilemma of green democracy, it is by no means necessary. The dilemma can also be avoided through endogenous domain restrictions. Unlike its exogenous counterpart, this approach does not bar 'unqualified' inputs, from the outset, from entering the decision procedure. Instead, it 'processes' any 'unqualified' inputs in such a way that they all become admissible inputs. In the case of green democracy, any individual opinions not falling into the subset of green outcomes, *Y*, will be 'processed' in such a way that they are made to fall into *Y*.

First possibility: Eco-transformation

'Eco-transformation' is a possible mechanism for processing individual opinions in the required way. This can be achieved by persuading individuals to revise any opinions from non-green to green, such as through deliberation.[20] In green political theory, green democracy is often advocated as consisting of certain deliberative arrangements (e.g., Dobson, 1996b; Jacobs, 1997; Barry, 1999; Dryzek, 2000; Goodin, 2003; Smith, 2003; Eckersley, 2004). Deliberation enables individuals to conduct reasoned public debate and/or discussion about their opinions, in which they can either revise or retain their original opinions. What results from deliberation is either a universal consensus or an on-going divergence of opinions.

The reformulation of green democracy as comprising deliberation can in principle resolve the dilemma of green democracy. Consider, once again, a combination of green and non-green opinions. Rather than rejecting the non-green opinions from the outset as in the case of eco-filtering, eco-transformation aims at producing green opinions in the domain by persuading individuals to change their opinions from non-green to green. Eventually, *if* such a change is successfully achieved with all or a sufficient number of individual opinions, *then* the resulting democratic outcome – again, for example, the majority or plurality winner among the individual votes – will be green. In this way, the condition of green outcomes will be met.[21]

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[20] At the same time, eco-transformation may also be realised through publicity and education. See Chapter 2 for further discussion.

[21] See Chapter 2 for a detailed illustration.

Deliberation is appealing at least on the grounds of inclusion and equality. On the one hand, a prominent view in environmental ethics holds that entities such as nature and non-human animals, as well as future generations of humans and non-humans, are relevant stakeholders and have their own interests in issues of environmental sustainability. Deliberation allows these interests to be unveiled and considered in decision-making (e.g., Goodin, 1996; Dryzek, 2000; Eckersley, 2004). Dryzek (2000), for instance, contends that the interests of non-humans will be reflected in deliberation because:

> "[T]he practice of effective listening has to be central to any discursive democracy … We should [therefore] listen to signals emanating from the natural world with the same sort of respect we accord communication emanating from human subjects, and as requiring equally careful interpretation." (Dryzek, 2000, p. 149)[22]

On the other hand, deliberation satisfies democratic equality by offering all individuals an equal opportunity to articulate, discuss and amend their opinions. This enhances democratic legitimacy (Cohen, 2003), especially for environmental decisions which are often dominated by a certain group of people, such as experts and professionals (e.g., Barry, 1999; Smith, 2003).[23]

Some arguments for eco-transformation make the positive claim that deliberation enhances the *likelihood* of green collective decisions. This is because, in deliberation, individuals are expected to justify their opinions in a public setting. As the reasons cited play a significant role in processing these opinions, individuals are able to develop more 'other-regarding' perspectives in formulating their opinions (Miller, 1992). Such other-regarding perspectives have much in common with the ethical reasoning in environmental philosophy, notably the inclusion and consideration of non-humans' interests (e.g., Goodin, 1996; Smith, 2001; Eckersley, 2004). For example, Goodin (1996) argues that:

> "[Discursive] participatory democracy makes the political system more responsive to green values because the more others there are who have to

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[22] Similarly, Eckersley (2004) argues that "[p]ublic spirited political deliberation is the process by which we *learn* of our dependence on others (and the environment) and the process by which we learn to recognize and respect differently situated others (including nonhuman others and future generations)." (Eckersley, 2004, p. 115; her emphasis)

[23] See Chapter 6 for further discussion.

be given an explanation, the *more likely* it is that there will be someone among them who internalizes the interests of nature." (Goodin, 1996, p. 845; emphasis added)

It is also claimed that deliberation can foster cooperative behaviour among individuals, which then overcomes the collective action problems in many environmental challenges. Dryzek (1987) asserts that "the discursive processes central to communicative rationalization are likely to promote 'cooperative' over 'defecting' strategies in the prisoners' dilemma", and this is backed up by empirical research findings (e.g., Jerdee and Rosen, 1974; Dawes, McTavish and Shaklee, 1977).[24] All in all, a process of deliberation makes it easier for green values to emerge and is thus more prone to arriving at green decisions (Arias-Maldonado, 2007; Carter, 2007).

An objection to eco-transformation, however, is that deliberation is by no means sufficient to *guarantee* green decisions. The problem is that deliberation as a *procedure* may or may not produce substantive *outcomes* of environmental sustainability.[25] It is true that individuals *may* formulate green opinions from the other-regarding perspective, but whether they *actually* do so is another (empirical) question. This is because individuals may still, even after a period of deliberation, prioritise some other considerations over those of the environment, or may simply dismiss any green opinions, however reasonable, that they dislike.[26]

Hence, there is no way we can conclude that eco-transformation in the form of deliberation can *always* circumvent the dilemma of green democracy. Instead, this depends on empirical circumstances.[27]

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[24] See Chapter 2 for further discussion.

[25] Cf. Goodin (1992) and the dilemma of green democracy above.

[26] As Dobson (1993) argues, "there is no *guarantee* that the free and equal conversations that ensue will grant a more valued status to the non-human world than it has at present" (Dobson, 1993, p. 198; emphasis added). Similarly, Smith (2003) argues that "deliberative politics cannot *guarantee* that environmental values will necessarily be given a higher priority in decisions. All that can be guaranteed is that the values we associate with the non-human world can at least be articulated and defended. All voices have the right to be heard ... However, an equal right to be heard does not guarantee priority in judgments and decisions." (Smith, 2003, pp. 66-67; his emphasis)

[27] See Chapter 2 for more formal discussion on how a decision procedure can guarantee green outcomes upon relaxing robustness to pluralism.

Second possibility: Contextual congruence

While deliberation may, depending on circumstances, produce green collective decisions, the former is not a necessary condition for the latter. It is possible, alternatively, for green opinions to emerge spontaneously even without deliberation. In this case, there are no 'unqualified' inputs that need to be processed by any mechanism and the dilemma of green democracy is automatically resolved. This congruence between individual opinions and expected collective outcomes depends, again, on empirical circumstances.[28]

This congruence can arise when there are positive synergies between what is good for oneself and what is good for the environment. In other words, when both goods coincide, even if individuals formulate opinions solely based on their own interests, these opinions can also be green. This can be a result of culture, customs and/or traditions which make people sufficiently green-minded. Besides, this can occur in a context where people are accustomed to a green lifestyle, where people are passionate about the environment, or where people are simply in close proximity to nature (think of people living in a beautiful Alpine village).

Alternatively, such contextual congruence may also be achieved by education or by introducing fiscal incentives/disincentives.[29] These strategies do not directly act on individual opinions, but foster a favourable context for individuals to formulate their opinions accordingly. However, whether we can generally correlate these strategies with green opinions depends crucially on what the relevant individuals eventually come to believe and on how they act in a particular context.

Summary

In sum, we may, for the purpose of avoiding the dilemma of green democracy, relax the condition of robustness to pluralism by restricting, either exogenously or endogenously, the domain of admissible inputs to the democratic procedure. Exogenous domain restrictions (or eco-filtering) prevent, in the first place, non-green individual opinions from being accepted into the decision procedure. This can be

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[28] We notice, at least, that in 2007, the Board of Directors of San Francisco, democratically elected by its local constituencies, voted for legislation which banned plastic shopping bags in that city. See "San Francisco Board Votes to Ban Some Plastic Bags", *New York Times* (28 March 2007), http://www.nytimes.com/2007/03/28/us/28plastic.html (accessed 2 March 2011).

[29] Examples of fiscal incentives/disincentives include subsidised public bicycle hire and congestion charging aimed at reducing the use of private vehicles in a metropolitan area. Notice that the use of these incentives/disincentives does not render *collective* decision-making unnecessary as in eco-libertarianism (see Section 1.4).

grounded on certain normative theories in environmental ethics. Endogenous domain restrictions, by contrast, aim to transform non-green opinions into green ones. Such a change in opinions may be induced by deliberation (i.e., eco-transformation) or may emerge spontaneously without any external mechanism (i.e., contextual congruence).

1.4 How to avoid the dilemma II: Relaxing consensus preservation

In addition to restricting the domain, it is also possible to avoid the dilemma of green democracy by relaxing consensus preservation. This responsiveness condition is minimal, in the sense that it only requires the decision procedure not to overrule unanimously held individual opinions. In other words, as long as there is a slight disagreement between individual opinions, it becomes possible – consistently with consensus preservation – for the decision procedure to process the inputs in any way, democratic or undemocratic.

To relax consensus preservation is to allow unanimous agreements to be overruled. This can be achieved by either restricting the decision power of individuals or restricting permissible decisions. When there are unanimous non-green opinions, the former approach renders the decision procedure unresponsive to these, whereas the latter approach overrules non-green outcomes after consideration by the decision procedure. Eco-authoritarianism, eco-technocracy and eco-libertarianism are examples of the former, whilst substantive environmental rights and procedural environmental rights are examples of the latter.

Proposal 1: Restricting the decision power of individuals
This approach reduces the influence of individuals' opinions on the decision-making process despite the fact that these opinions have been, in accordance with the condition of robustness to pluralism, accepted by the decision procedure as admissible inputs. The present 'exogenous' restriction of individuals' decision power can be realised by either of the following routes:

- imposing prescribed outcomes, e.g., eco-authoritarianism;
- being biased towards the opinion(s) of certain special individual(s), e.g., eco-technocracy; or

- dismissing collective decision-making altogether, e.g., eco-libertarianism.

First possibility: Eco-authoritarianism

Eco-authoritarianism prescribes and imposes a green alternative as the collective outcome, overruling any non-green alternatives supported by individuals. Robert Heilbroner (1974) suggests that humans, when faced with environmental crises, must "enforce whatever adaptational or transformational changes … for survival" (p. 175). Enforcing these changes "requires action on the grand scale" and "this will necessitate central authority" (p. 176). In particular, a monastic organisation of society with "a 'religious' orientation with a 'military' discipline … offers the greatest promise of making those enormous transformations needed to reach a new stable socio-economic basis" (pp. 176-177). This implies that, in the context of decision-making, some decision alternatives that are contrary to the goal of human survival, such as a non-green alternative forbidding adaptational or transformational changes, will be ruled out by the central authority.

Similarly, William Ophuls (1977) argues that "ecological scarcity … seems to engender overwhelming pressures toward political systems that are frankly authoritarian by current standards" (p. 163). Ophuls thinks that there is no other way to check the overexploitation of resources or, to ensure the competent direction of a complex society's affairs according to steady-state imperatives which balance consumption and provision of environmental resources.

Overexploitation of resources is possible when individuals are free to consume scarce resources in such a way that they benefit individually from consumption without bearing the cost of the depletion of resources. This is Garret Hardin's (1968) celebrated notion of the 'tragedy of the commons'.[30] Ophuls contends that "the logic of individualism creates conditions that require the reimposition of some kind of absolutism in order to avoid the ruin" (Ophuls, 1973, p. 228; cited in de Geus, p. 191). He also agrees with Hardin that overexploitation of resources can be tackled by 'mutual coercion, mutually agreed upon' which comprises the restriction of the freedom of all individuals to consume scarce resources in the commons. This implies that, in the context of decision-making, certain decision alternatives which are

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[30] See Chapter 2 for further discussion.

contrary to the restriction of freedom, such as a non-green alternative permitting unlimited consumption of resources, will be ruled out by an authoritarian political system.

Hardin (1968) argues that "the only way we can preserve and nurture other and more precious freedom is by relinquishing the freedom to breed", and "only so, can we put an end to this aspect of the tragedy of the commons" (p. 1248). He suggests that the overpopulation problem can be tackled by central regulation and enforcement that restrains the freedom to procreate.

An example of such population control is the 'one-child policy' implemented since 1979 in China (Roberts, 2011, pp. 168-170). This policy is aimed at stabilising population growth in China so as to relieve the economic, social and environmental problems associated with overpopulation. Families subject to this policy are not allowed to have more than one child unless granted special permission. The policy has been implemented coercively in some regions, including by means such as raising the minimum age for marriage, fines for those having a larger number of children and even forced abortion.[31]

More generally, eco-authoritarianism can also describe the industrial environmental regulation in China before the mid-1990s. Shi and Zhang (2007) suggest that the authoritarian state of China was a dominant actor in environmental management which commanded, controlled and impacted on industry and the community (p. 128). Measures aimed at improving the quality of the environment, including laws, regulations and regulatory schemes, were implemented by the State Environmental Protection Agency, a national environmental authority, as well as by a number of Environmental Protection Bureaus at the provincial, municipal, county and township levels (p. 128).

Mainstream criticisms of eco-authoritarianism focus on its failure, as compared to democracy, to accommodate the plurality of environmental values and opinions as well as the interests of future humans and non-human entities. Ball (2006) argues that an authoritarian system cannot "represent and take into account the interests of … animals and eco-systems", partly because "authoritarian rule is, politically speaking, a monoculture" which, as "a multiculture consisting of diverse and

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[31] Besides population control, there are other examples of eco-authoritarianism which concern the building of dams to generate hydro-electricity, including those in China, India, Malaysia and Thailand. These building projects have been carried out despite the objections from indigenous populations in forests (see Doyle and McEachern, 2008, p. 233).

sometimes cacophonous voices, interests, and agendas" (p. 145), is different from democracy. Other challenges are raised regarding the impracticability of eco-authoritarianism in the current economic and political context. As Carter (2007) observes, "the draconian prescriptions of survivalism", such as those advocated by Heilbroner and Ophuls, "seem impractical in a modern world dominated economically by global capitalism and politically by liberal democracy" (p. 43).

Second possibility: Eco-technocracy

An alternative to eco-authoritarianism is eco-technocracy. Unlike eco-authoritarianism, eco-technocracy, instead of directly prescribing and imposing a green alternative as the collective outcome, grants the decision power primarily to elites, experts and professionals. A green collective decision is available if, and only if, these exclusive technocrats submit green opinions (or judgments) as inputs to the decision procedure.

Recall what Ophuls (1977) suggests as the second reason for eco-authoritarianism, namely to ensure the competent direction of a complex society's affairs according to steady-state imperatives. Ophuls perceives environmental decisions as significantly involving technology, and "more technology means greater complexity and greater need for knowledge and technical expertise" (p. 159). Thus, "the average citizen will not be able to make a constructive contribution to decision making, so that 'experts' and 'authorities' will perform rule" (p. 159). He goes on to assert that the ecologically complex steady-state society needs to be ruled by "a class of ecological mandarins who possess the esoteric knowledge", and "only those possessing the ecological and other competencies necessary to make prudent decisions [are] allowed full participation in the political process" (p. 163). He acknowledges that such a society is less democratic and more oligarchic than today's industrial societies.

In practice, eco-technocracy can be understood as a set of institutions for environmental decision-making, emphasising the rational management of the environment based on the best available expertise for the sake of the public interest (Dryzek, 2005). Examples of eco-technocratic institutions include (Dryzek, 2005, pp. 76-82):

- resource management bureaucracies with individuals possessing relevant scientific and professional expertise, such as the Bureau of Land Management and the Fish and Wildlife Service in the United States (U.S.);

- pollution control agencies whose authority of claims is rested on the scientific and professional expertise, such as Her Majesty's Inspectorate of Pollution in the Department of the Environment in the United Kingdom (U.K.); and

- expert advisory commissions in which experts provide advice on environmental matters, such as the Council on Environmental Quality in the U.S. and the Royal Commission on Environmental Pollution in the U.K.[32]

Like eco-authoritarianism, eco-technocracy faces significant challenges regarding its insensitivity to pluralistic environmental values and opinions, even if in principle it can produce green collective decisions.[33] One criticism concerns the prominent methodology used in technocratic decision-making, i.e., cost-benefit analysis. In decision-making, cost-benefit analysis assesses a decision alternative by comparing its expected costs and benefits in monetary terms; if its benefits outweigh the costs, then it should be chosen. Nevertheless, such an analysis assumes that decision-making should be based only on maximising benefits (in monetary terms). It overlooks, however, the importance of other values and principles in assessing decision alternatives. Bias towards a single value as such, i.e., efficiency, is contrary to the condition of pluralism (Smith, 2003).[34]

Third possibility: Eco-libertarianism

Recall that one solution to the 'tragedy of the commons' suggested by Hardin (1968) is 'mutual coercion, mutually agreed upon', or eco-authoritarianism more generally.

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[32] The Royal Commission on Environmental Pollution was closed on 1 April 2011.

[33] See also Chapter 6 on how (eco-)technocracy and democracy may co-exist and complement each other in a democratic institution which boosts epistemic performance as well as retains procedural fairness.

[34] As Smith (2003) argues, "according to value pluralism, efficiency is just one of a diversity of values that might guide policy decisions. Conditions need to be created in political institutions whereby a diversity of what may be incommensurable and incompatible values, goods or decision rules in judgments can be appealed to, and the alternative policy options that emerge assessed." (p. 163)

However, Hardin also proposes resource privatisation as an alternative solution in which individuals are incentivised through the assignment of clearly defined property rights to manage their privately-owned resources and to prevent over-consumption.

This captures partly the idea of eco-libertarianism, understood broadly as relying on free market mechanisms for achieving environmental ends. Contrary to eco-authoritarianism and eco-technocracy, eco-libertarianism does not, in the first place, recognise the need to make collective decisions on environmental matters through democratic, authoritarian or technocratic means; such decisions should, instead, be left to the market.[35]

For example, through resource privatisation, decision power over the resources concerned is transferred from the people to the relevant owner(s) of the resources, rendering collective decision-making on these resources no longer necessary. Anderson and Leal (2001) argue for "a system of well-specified property rights to natural and environmental resources" in which these rights can be "held by individuals, corporations, non-profit environmental groups, or communal groups". By so doing, "a discipline is imposed on resource users because the wealth of the property owner is at stake if bad decisions are made" (p. 4). They claim that "market processes can encourage good resource stewardship", and that it is only "when rights are unclear and not well enforced that over-exploitation occurs" (Anderson and Leal, 2003, p. 209).

This implies that certain alternatives, namely green alternatives, will be chosen by the holder(s) of rights to the resources when making decisions on the corresponding resources. A collection of rights-holders making decisions in this manner can then bring about certain desirable decisions, such as green outcomes, at the aggregate level. An example of resource privatisation is the privatisation of land to the Nature Conservancy, the largest environmental group in the U.S., which obtains parcels of land and decides how the land should be used according to certain ecological evaluation standards (Anderson and Leal, pp. 4-5; Dryzek, 2005, pp. 123-128).

Apart from privatisation, eco-libertarianism can also take the form of government-regulated markets and economic incentives aimed at inducing individual

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[35] Note that eco-libertarianism is not classified as a proposal of domain restrictions since it allows individuals to freely express whatever opinions over environmental issues. It is only that their opinions play no role in determining the final outcomes as in a decision-making setting.

green behaviour. Notice that collective decision-making is still not necessary; green outcomes at the aggregate level, if any, are possible if a collection of individuals decides to take up behaviour which is consistent with green alternatives. Examples include pollution charging (such as congestion charging in big cities), tradable pollution permits (such as emissions trading schemes), product charges (such as on petrol and diesel for transport use) and subsidies to reward environmental behaviour (such as 'scrappage schemes' for replacing inefficient vehicles) (Roberts, 2011, pp. 210-215).[36]

It remains an open question, however, whether resource privatisation and economic incentives are better than democratic decision-making at securing green outcomes. In principle, eco-libertarianism does not rule out the possibility of environmental destruction, as long as people are willing and able to pay for the rights and/or freedom to exercise non-green behaviour. By allowing the buying and selling of such rights/freedom, eco-libertarianism, at the same time, invites criticisms from those who view non-green behaviour (such as polluting) as inherently wrong, and that anything which is inherently wrong should never be exchanged in the market.[37] If this challenge stands, eco-libertarianism still lacks something to be desired in terms of its normative desirability, regardless of whether green outcomes are produced or not.

Proposal 2: Restricting permissible decisions
In addition to restricting the decision power of individuals, the condition of consensus preservation may also be relaxed by restricting permissible decisions in such a way that only certain types of collective outputs are produced as valid collective decisions. Instead of shrinking the influence of individuals' opinions across the board regardless of what their opinions are, this approach allows individuals' opinions to determine collective outcomes if, and only if, the aggregate result of these opinions is consistent with the condition of green outcomes. In other words, any putative democratic decisions which are non-green will be overruled.

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[36] Cf. the economic incentives used to induce green opinions for endogenous domain restrictions, in which *collective* decision-making still takes place.

[37] For example, Goodin (1994) criticises the idea of selling rights to destroy nature (such as emissions trading) as similar to the selling of indulgences in medieval times. In his view, environmental despoliation is inherently wrong which should not be indulged or recompensed by cash payments. Whether Goodin's argument is sound is certainly a valuable question, but it is beyond of the scope of the enquiry here; I wish only to point out that it remains debatable as to whether eco-libertarianism is normatively appealing, *even if* it generates green outcomes.

This can take the form of introducing certain rights provisions in statue laws or constitutions which are consistent with environmental sustainability. These rights provisions deal with substantive and/or procedural environmental issues.

First possibility: Substantive environmental rights

One interpretation of substantive environmental rights is as a set of human rights to an adequate environment for health and well-being. Hayward (2005), for example, claims that these environmental human rights are morally paramount because "environmental harms can threaten vital human interests", and that the lack of rights which stand substantively against these environmental harms "would be a detriment to humans comparable to that protected against by many established human rights" (pp. 47-48).

In practice, the link between human rights and the environment was established in some environmental declarations and agreements.[38] Environmental human rights were broadly conceived in the draft declaration of 27 principles of the United Nations Sub-Commission on Human Rights and the Environment of 1994, which states that "all persons have the right to a secure, healthy and ecologically sound environment" (UNESC, 1994; cited in Elliott, 2004, p. 148). Examples of these principles include "rights of all persons to freedom from pollution and environmental degradation", "the highest attainable standard of health free from environmental harm" and "safe and healthy food and water adequate to their well-being" (cited in Hayward, 2005, pp. 29-30).

The principles spelt out in the above declarations and agreements are, in turn, incorporated as constitutional environmental provisions in a number of countries.[39]

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[38] Examples of these environmental declarations and agreements include the following (cited in Elliot, 2004, pp. 148-149; Hayward, 2005, pp. 54-58): Principle 1 of the 1972 Stockholm Declaration on the Human Environment declares that people have the "fundamental rights to freedom, equality, and adequate conditions of life, in an environment of a quality that permits a life of dignity and well-being" and that they bear "a solemn responsibility to protect and improve the environment for present and future generations"; Article 24 of the 1981 African Charter of Human and Peoples' Rights states that "all peoples shall have the right to a general satisfactory environment favourable to their development"; The Brundtland Report of 1987 in the World Commission on Environment and Development states that "all human beings have the fundamental right to an environment adequate for their health and well-being"; and the 1989 Additional Protocol of the 1969 American Convention on Human Rights in the Area of Economic, Social and Cultural Rights states that "everyone shall have the right to live in a healthy environment …"

[39] Examples of constitutional environmental provisions include (cited in Ekeli, 2007, pp. 380-382; Birnie, Boyle and Redgwell, 2009, pp. 275-277): Article 45 of the Constitution of Spain: Every person has "the right to enjoy an environment suitable for the development of the person as well as the duty to preserve it"; Article 110b of the Constitution of Norway: "Every person has a right to an

These constitutional rights to an adequate environment have also been endorsed in several works on environmental protection and intergenerational justice (Brandl and Bungert, 1992; Doeleman and Sandler, 1998; Wood, 2004; cited in Beckman, 2008, p. 612). The rights in question may be exercised through judicial review to overrule laws or policies which are in conflict with the stipulations as in these rights.[40]

Second possibility: Procedural environmental rights

Contrary to their substantive counterparts, procedural environmental rights concern the rights to information, rights of legal redress and rights of participation (Hayward, 2000).[41] These procedural rights are based on the view that civil participation in public affairs is necessary for environmental protection and sustainable development (Birnie, Boyle and Redgwell, 2009). They were conceived in Principle 10 of the 1992 Rio Declaration:

> "Environmental issues are best handled with the participation of all concerned citizens, at the relevant level … States shall facilitate and encourage public awareness and participation by making information widely available." (Cited in Birnie, Boyle and Redgwell, 2009, pp. 289-290)

Subsequently, the 1998 Aarhus Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters gave effect to Principle 10 of the 1992 Rio Declaration by establishing rights "to

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environment that is conducive to health and to natural surroundings whose productivity and diversity are preserved …"; Article 42 of the 1993 Russian Constitution: Every person has "the right to a favourable environment, reliable information about its condition and to compensate for the damage caused to his or her health or property by ecological violations"; Article 225 of the Constitution of Brazil: Every person has "the right to an ecologically balanced environment … and both the Government and the community shall have the duty to defend and preserve it for present and future generations", and Article 24 of the Constitution of South Africa: "Everyone has the right a. to an environment that is not harmful to their health or well-being; and b. to have the environment protected … through reasonable legislative and other measures …" Note that the list is not exhaustive.

[40] Examples of such judicial review include (cited in May, 2006): Texas Independent Producers and Royalty Owners Association against U.S. Environmental Protection Agency in enforcing the Clean Water Act [410 F.3d 964 (7th Cir. 2005)] (N.B. this review was unsuccessful); and Ranchers Cattlemen Action Legal Fund United Stockgrowers of America against U.S. Department of Agriculture in bringing a claim based on National Environmental Policy Act [415 F3.d 1078, 1103-05, 2005 WL 1731761, at *19-*20 (9th Cir. 2005)] (N.B. this review was unsuccessful).

[41] Eckersley (1996) further specifies these rights as including "rights to know (i.e., a right to environmental information …); rights to participate in the determination of environmental standards; rights to object to ministerial and agency environmental decisions, and rights to bring actions against departments, agencies, firms and individuals that fail to carry out their duties according to law" (p. 230).

information, to participation in decision-making, and to access to justice in environmental matters" (Hayward, 2005, p. 57).

For exercising procedural environmental rights, Eckersley (1996) supports an environmental bill of rights which provides citizens with a right to make sure that environmental quality is maintained up to the standards as set by existing environmental laws and regulations. An empirical example of this is the Environmental Bill of Rights Act enacted by the parliament of Ontario, Canada in February 1994. This declares that "the people of Ontario recognize the inherent value of the national environment" and "have a right to a healthful environment" (Environmental Bill of Rights Act, Bill 26, 1993; cited in Eckersley, 1996, pp. 230-231), which constitutes the substantive aspect of environmental rights. The remaining part of the Act focuses on procedural environmental rights which grant to citizens in its province formal rights to:[42]

- participate in ministry decisions about the environment and hold government accountable for these decisions;
- access the registry for information; and
- appeal against a ministry decision and review a law or investigate harm to the environment.

The institutions of substantive/procedural environmental rights, particularly the constitutional provisions, are, nevertheless, rigid and inflexible. They are also vulnerable to the objection that they compromise democracy by hindering or even precluding democratic majorities from amending these provisions of rights in the future (Beckman, 2008). This raises the question of whether these provisions of rights can always accurately reflect varying environmental concerns across time. Having said that, as long as these constitutional provisions rule out all the possible decision alternatives which are non-green (and potentially non-green), by *substantive* environmental rights, we would be able to achieve green decision outcomes.

Summary

In sum, the condition of consensus preservation may be relaxed by either restricting the decision power of individuals, or restricting permissible collective decisions. The

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[42] Environmental Commissioner of Ontario: http://www.eco.on.ca (accessed 15 April 2011)

first approach reduces the influence of individuals' opinions on decision-making, whereas the second approach accepts only certain outputs of the democratic process as valid collective decisions.

To implement the first approach, one may take the route of eco-authoritarianism, eco-technocracy or eco-libertarianism. Eco-authoritarianism favours a prescribed (green) decision; eco-technocracy favours a (green) decision by experts and professionals, and eco-libertarianism favours a (green) decision as a result of market interactions. To implement the second approach, one may resort to substantive environmental rights and/or procedural environmental rights that are built into laws and/or constitutions. Environmental rights may be exercised through judicial review or on the basis of an environmental bill of rights which allows people to appeal against or overrule non-green collective decisions.

1.5 How to avoid the dilemma III: Relaxing green outcomes

The third approach to avoiding the dilemma of green democracy is to relax green outcomes. This output condition is a reasonable stipulation if we demand that the outcomes from the decision procedure fulfil the fundamental desideratum of environmental sustainability. Nevertheless, it may be unrealistic to expect a democratic procedure to guarantee green outcomes across different circumstances. As Arias-Maldonado (2007) contends, this is attributable to "the uncertainty and contingency which characterise political processes", and green politics, after all, is not immune to uncertainty and contingency as such – "[t]he politics of nature cannot escape the nature of politics" (p. 246).

There are broadly two ways in which we might relax green outcomes. The first would be to give up green democracy altogether, or, slightly better, to opt for a 'pragmatic' form of green democracy. The second would be to weaken the 'deterministic' or 'rigid' view of green democracy presupposed by the basic definition of green outcomes. The requirement that the decision procedure should *always* generate a green outcome would then be replaced by the weaker requirement that the decision procedure should merely have a *high*, or *sufficiently high*, *probability* of generating a green outcome. Both reformulated models of green

democracy can be realised as various forms of collective action in environmental politics as well as innovative mechanisms for environmental decision-making.[43]

First possibility: Pragmatic (green) democracy

The condition of green outcomes can be relaxed by 'simplifying' green democracy to pragmatic (green) democracy. In its simplest form, pragmatic (green) democracy does not assume any particular outcome, or truth, it seeks to pursue from democracy, for example, green outcomes.[44] Dryzek (2005) understands this form of democracy as "signifying a practical, realistic orientation to the world, the opposite of starry-eyed idealism" and a "flexible process involving many voices, and cooperation across a plurality of perspectives" (pp. 99-100). In other words, pragmatic (green) democracy focuses on its procedural quality ('flexible process') and does not specify any green decision it ought to achieve ('starry-eyed idealism').

In the context of environmental decision-making, pragmatic (green) democracy is founded on environmental pragmatism, a philosophical position in environmental ethics which recognises the fact of uncertainty in all environmental decision-making. Light and Katz (1996) define environmental pragmatism as "the open-ended inquiry into the specific real-life problems of humanity's relationship with the environment" (p. 2). Weston (1996) suggests an open-ended environmental practice in which "[w]e do not know in advance what we will find" and there is an "opening of 'space' for interaction", and that new environmental values can possibly be created and evolved (pp. 154-155).

Saward (1993) thinks that an open-ended democratic procedure "can be justified rationally precisely because of the impossibility of incontrovertible proof of anything" (p. 76). He argues that, because uncertainty is inevitable for environmental issues, even environmentalists should abandon imperatives and remain flexible and open to constant self-interrogation. Mill (1996), at the same time, acknowledges

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[43] Examples of such collective action include green political parties, environmental interest groups and environmental social movements, whereas mediation, consensus conferences, citizens' juries and citizen initiatives/referendums are examples of the innovative mechanisms (Smith, 2001, 2003; Dryzek, 2005; see Chapter 4 for further discussion).

[44] Note that it is the decision *procedure*, i.e., green democracy, that is pragmatic rather than the decision *outcomes*. A pragmatic decision procedure does not assume any particular decision outcomes (such as green outcomes), which is the aim of pragmatic (green) democracy. A pragmatic decision *outcome* is, instead, not a product from any general principle or mechanism, and it is relevant only to the particular context concerned.

pragmatic (green) democracy as important for green political thinking, claiming that green political theory can ensure a green political process but not green outcomes.

Pragmatic (green) democracy, in other words, does not assume a (non-negotiable) eco-centric position in environmental ethics which is morally conclusive (Torgerson, 1999; Smith, 2003). Instead, it implies that democracy may produce collective decisions that are not green. There is an empirical example which can illustrate this point, namely the controversy, continuing year after year, over whether or not to drill for oil in the Arctic National Wildlife Refuge in Alaska (cited in Ball, 2006, p. 134). The views in support of drilling focus mainly on the associated economic benefits, whereas the opposing views are mainly concerned with the associated environmental damage. Meanwhile, it has been reported that over the past 30 years every member of the democratically elected Alaska State Legislature, every Alaskan Congressional delegate and every Alaskan Governor has been supportive of drilling.[45]

Imagine that the decision power in the above case rested on the Alaska State Legislature instead of the U.S. Congress as it does in reality. If it turned out that all the individuals in the Alaska State Legislature supported drilling, and drilling itself is non-green, then, by adopting a pragmatic-democratic decision procedure, the collective decision would be in favour of drilling, which is non-green. Thus, it is apparent that the condition of green outcome is violated upon retaining the conditions of robustness to pluralism and consensus preservation in a pragmatic-democratic procedure.

Second possibility: Probabilistic green democracy

Unlike pragmatic (green) democracy, probabilistic green democracy modifies the relationship between democracy and environmentalism, not by dropping the condition of green outcomes altogether, but by replacing it with a weaker desideratum of *likelihood* of green outcomes. For a *probabilistic* green democracy, it is not necessary for the decision procedure always to generate green outcomes; there only needs to be a sufficiently high probability of achieving this.

In other words, in probabilistic green democracy, the relationship between democracy and environmental sustainability is no longer conceptual, but merely

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[45] Arctic Power: http://www.anwr.org (accessed 15 April 2011); see also the official website of the Arctic National Wildlife Refuge: http://arctic.fws.gov/ (accessed 15 April 2011).

contingent. Probabilistic green democracy is justified because the decision outcomes that it generates, as compared to other decision procedures, track the criterion of environmentalism (i.e., an outcome-based justification). However, whether this is true often depends on the actual circumstances to which probabilistic green democracy is applied.

Dobson (1996a) endorses probabilistic green democracy from a green perspective:

> "We presume that advocates of green values believe that they are the 'right' values, and that advocates of the sustainable society believe that it is the 'right' kind of society in which to live. Such advocates, then, should prefer the kind of decision-making procedure which is *most likely* to come to these conclusions … greens should be committed to democracy as the only form of decision making that – for Millian reasons – will necessarily produce [these conclusions]." (p. 139; emphasis added)

The 'Millian reasons' refers to the view of John Stuart Mill that truths are more likely to emerge from an open-ended decision procedure, which also justifies pragmatic (green) democracy (Saward, 1993, p. 76). The only difference is that truths are still presumed as green outcomes for probabilistic green democracy, but not for its pragmatic counterpart.

Very often, this probabilistic view of green democracy is associated with some sort of participatory democracy or, more specifically, with democratic deliberation. Arias-Maldonado (2007) observes that one justification of deliberation has been based on the claim that green values are *more likely* to emerge in a deliberative context (p. 235-237; see also Carter, 2007, p. 56). Dryzek (1987), for example, asserts that deliberative democracy is more 'ecologically rational' than other decision mechanisms, in the sense that the negative feedback and coordination in the deliberative process draws people to identify environmental quality as a generalisable interest for human survival (Smith, 2003, pp. 61-63). Other justifications, including the moralising effect of other-regarding deliberation (e.g., Miller, 1992) and the enlarged mentality effect as a result of reflective deliberation

(e.g., Eckersley, 2000; Goodin, 2003), also attract people to considering green perspectives in decision-making (see also Smith, 2003, pp. 63-65).[46]

Deliberation as such, however, can constitute, at most, a version of probabilistic green democracy because deliberation itself, as I have already pointed out in Section 1.3, cannot *guarantee* that green collective decisions will eventually be generated from the decision procedure (Goodin, 1992; Dobson, 1993; Smith, 2003).[47]

Whether probabilistic green democracy can be justified, as claimed, from an outcome-based perspective is subject to contingency. For example, consider again the oil drilling case in Alaska. If members in the Alaska State Legislature unanimously support a decision in favour of drilling, it will not be possible even to expect a green decision (understood narrowly as a decision to reject drilling) from a democratic decision mechanism here.

Another possible challenge for probabilistic green democracy is that the chances of it generating green outcomes are not sufficiently high compared to other decision mechanisms. For instance, consider an eco-authoritarian procedure. If the procedure is workable in a particular context, and if there also exists a green alternative that can be prescribed and imposed on the decision-making process with certainty, probabilistic green democracy may not outperform such an eco-authoritarian procedure from an outcome-based perspective.

Having said that, there is empirical evidence which may support a case for probabilistic green democracy. For example, according to the statistics from the United States Energy Information Administration (2006), among the 40 countries which are responsible for about 90% of total world carbon emissions, there is a fairly strong positive correlation between democracies and reduction of carbon emissions rate from 2000 to 2006 (cited in Held and Fane-Hervey, 2009, pp. 6-7 and Appendix). Although such evidence is inconclusive, Held and Fane-Hervey (2009) acknowledge that democracies are preferable to authoritarianism for bringing about environmental sustainability (pp. 7-8). This implies that probabilistic green democracy is, to some extent, empirically tractable.

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[46] Refer also to our discussion in Section 1.3; see also Chapters 2, 4, 5 and 7.

[47] Goodin (1992) argues that "[o]f course, people still might conceive their interests incorrectly, and morally there might be more to good public policy than mere interest satisfaction. So widespread, active public participation might not guarantee morally perfect outcomes … [although] it is quite *likely* to promote morally better ones." (p. 128; emphasis added)

Summary

In sum, the desideratum of green outcomes may be relaxed by either giving up green democracy altogether or weakening the deterministic view of green democracy. The first approach leads us to pragmatic (green) democracy, which drops the presumption of a particular green outcome from democracy in such a way that the democratic decision procedure is allowed to generate non-green collective decisions. The second approach, by contrast, leads us to probabilistic green democracy, which adopts a weakened condition in such a way that a democratic decision procedure is merely expected to generate green collective decisions with a high, or sufficiently high, probability. There are theoretical arguments and empirical evidence in support of these reformulated models of green democracy.

1.6 Concluding remarks

Of course, there is a sense in which what I am discussing here is simply a version of a well-recognised problem, namely the tension between procedural and substantive desiderata on democracy. Ultimately, we are faced with a perennial question in the study of democracy: whether a decision mechanism can be good in terms of both procedure and outcome. If there is no way that both of these can go hand-in-hand, which should prevail and why?

The controversies over green democracy concern a similar question. As I have pointed out in Section 1.1, the uneasy relationship between democracy and environmental sustainability is not entirely new; this has been framed, in green political theory, as a 'means-ends' problem between democratic agency and environmental values. On this issue, Goodin (1992) recommends prioritising environmental values in such a way that environmental outcomes can in the end be guaranteed. His position, however, assumes that we take for granted the logical primitive in the moral system of green political theory, i.e., right things being done rather than right things being done in the right way. It makes green democracy, as argued, vulnerable to degenerating into an authoritarian procedure, such as eco-authoritarianism, as long as environmental outcomes can be better secured by

authoritarianism than by democracy. This conclusion is, arguably, far from appealing from a democratic point of view.

It is, therefore, worth reframing the 'means-ends' problem in such a way that we can come up with possible solutions which are more than simply a hard choice between democratic agency and environmental values. I hope to have shown that recognising the dilemma of green democracy provides a useful perspective on understanding the relationship between democracy and environmental sustainability. I also hope to have demonstrated how different escape routes from the dilemma of green democracy (Table 1.1) can serve as a theoretical basis for designing democratic institutions for environmental decision-making.

(1) Relaxing robustness to pluralism	(a) Restricting the domain exogenously	Eco-filtering
	(b) Restricting the domain endogenously	• Eco-transformation • Contextual congruence
(2) Relaxing consensus preservation	(a) Restricting the decision power of individuals	• Eco-authoritarianism • Eco-technocracy • Eco-libertarianism
	(b) Restricting permissible decisions	• Substantive environmental rights • Procedural environmental rights
(3) Relaxing green outcomes	(a) Abandoning the requirement of green outcomes	Pragmatic (green) democracy
	(b) Weakening the requirement of green outcomes	Probabilistic green democracy

Table 1.1: Solutions to the dilemma of green democracy

CHAPTER 2

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RELAXING ROBUSTNESS TO PLURALISM

In Chapter 1, I introduced a dilemma of green democracy based on a simple model of collective decision-making. The dilemma of green democracy suggests that there exists no decision procedure which simultaneously satisfies the conditions of robustness to pluralism, consensus preservation and green outcomes. A decision procedure can at most fulfil any two of these conditions. Therefore, green democracy is logically possible only if one of the three conditions is relaxed, which constitutes a minimal requirement on any democratic institution for environmental decision-making.

As previously argued, we may escape from the dilemma of green democracy by relaxing the first condition, i.e., robustness to pluralism. This can be achieved by restricting the domain either exogenously or endogenously. To reiterate, exogenous domain restrictions reject any non-green opinions from being accepted as admissible inputs, whereas under endogenous domain restrictions, any non-green opinions are not dismissed from the outset but may be transformed into green opinions by, say, deliberation. The latter can also take place when the decision procedure is applied to a context where it so happens that all opinions are green (i.e., I called this 'contextual congruence').

In the real world, the purpose of domain restrictions is to modify the input condition of a democratic process so that green decision outcomes will emerge. The most convenient scenario would be that all individuals were already sufficiently green-minded. If these individuals were asked to decide democratically on environmental issues, green outcomes would be readily available through contextual congruence, and hence no adjustment would have to be made to the input condition. Such a scenario is possible in places where people are accustomed to a green lifestyle, where people are passionate about the environment, or where people are simply in close proximity to nature (as in the example of a beautiful Alpine village).

However, experience teaches us that, the above scenario is generally hard to find. In fact, we are often faced with situations in which individuals are not

sufficiently or at all green-minded, with people being used to lifestyles which stress consumerism and materialism. If these people are asked to make environmental decisions democratically, green outcomes may not be secured unless we make adjustments to the democratic process. To obtain green decisions, we may, on the basis of certain normative justifications, selectively filter out non-green opinions and accept green opinions as the only valid inputs (i.e., 'exogenous domain restrictions'). Alternatively, we may persuade individuals to revise any opinions from non-green to green through deliberation, education and/or publicity (i.e., 'endogenous domain restrictions').

In this chapter, I shall ask whether domain restrictions in the form of the two proposals above – 'eco-filtering' and 'eco-transformation' – are desirable for collective environmental decision-making. More specifically, I shall examine whether, and if so under what conditions, eco-filtering and eco-transformation satisfy certain normative benchmarks of green outcomes and democratic inclusiveness. The conclusions are the following: (1) whether eco-filtering or eco-transformation produces green collective decisions depends on whether we can ensure, in the first place, the availability of green opinion(s); and (2) eco-filtering is less inclusive than eco-transformation, and how inclusive eco-transformation is depends on the aggregation procedure used and the type of decision agenda in question.

My discussion is structured as follows. Section 2.1 explains the idea of relaxing robustness to pluralism and how this can be realised through eco-filtering or eco-transformation. Section 2.2 discusses, from an outcome-based perspective, the normative desirability of both proposals. Section 2.3 offers a similar assessment from a constraint-based perspective. In Section 2.4, I draw some conclusions.

2.1 Relaxing robustness to pluralism: The idea

It is an empirical fact that, in the contemporary liberal context, pluralism exists in collective decision-making for almost all kinds of issues. Environmental issues appear to be no exception. As Smith (2003) points out:

"Value conflict is at the heart of the environmental politics. Decisions that affect the environment are typically multi-faceted: when reasoning

about the non-human world, individuals and groups often find themselves pulled in contradictory directions, appealing to values that they find difficult to reconcile" (p. 1).

What Smith (2003) refers to here is, specifically, pluralism in terms of values. Value conflict arises as a result of the existence of many different values which may be relevant to the decision issues in question, while these values are mutually incompatible and incommensurable. Two values are incompatible if they are inconsistent with, or contradictory to, each other, such as environmental protection versus environmental destruction. Two values are incommensurable if they cannot be reduced to another value for comparison, such as the aesthetic (or intrinsic) value of the environment versus the economic (or instrumental) value of the environment.

In value pluralism, we may disagree about certain values because of the values themselves, or because of some other values or arguments which can be inferred from these values. Value pluralism is relevant to collective decision-making when it involves a decision on a set of incompatible or incommensurable values, say in deciding whether the economic value of the environment is more important than its aesthetic value. The primary challenge for collective environmental decision-making is, therefore, whether, and if so how, we can rely on democracy to deliver green outcomes, given the existence of pluralistic environmental values.

To begin our discussion, let us consider the following hypothetical scenario which *mimics* the process of collective environmental decision-making in contemporary liberal democracies.

> **The 'Enviro Island' scenario:** 'Enviro Island' is a city-state with a system of representative democracy. All public policies proposed by the executive government are passed to the assembly for deliberation and decisions. All assembly members are elected by, and represent, citizens in their own constituencies.

The assembly members are about to make a collective decision on an environmental issue below which has recently become more salient in many metropolises.

> In 'Enviro Island' drivers are used to idling their vehicles' engines for air-conditioning while waiting. Several environmental groups are very concerned about the pollutants emitted by these idling engines, which

generate additional heat and cause nuisance to pedestrians. There is also a discourse from the medical professionals that prolonged exposure to these pollutants would boost the likelihood of pulmonary diseases, such as asthma and lung cancer.

The government proposes to introduce a statutory ban on idling vehicle engines. While the environmental groups are supportive of the ban, some professional drivers' associations object to the ban on the grounds that it would be unfair to taxi and goods vehicle drivers who often have to spend time waiting in cars. The proposal is passed to the assembly, and several of its members are going to decide whether to support or reject the ban.

As discussed in Chapter 1, the condition of robustness to pluralism requires that all individual opinions be accepted as admissible to the decision procedure. Pluralism, more generally, speaks of a situation in which a variety of individual opinions co-exist, and these opinions may, at least, contradict each other and be mutually incompatible. This is the situation when, in the example above, all the assembly members are allowed to choose to either support or reject the statutory ban.[48]

As for the 'robustness' requirement, this means that the decision procedure should function well, not merely accidentally but robustly across all possible variations of individual opinions. These variations, for instance, include unanimous support and unanimous rejection, as well as a mixture of opinions supporting and rejecting the ban above. It is also reasonable to expect, additionally, that each individual opinion will itself be consistent, i.e., that no individual member will choose to support *and* reject the ban simultaneously.

To reiterate the dilemma of green democracy, there exists no decision procedure which satisfies the conditions of robustness to pluralism, consensus preservation and green outcomes. Consider the 'Enviro Island' scenario. Suppose the only green decision is to support the statutory ban. If the decision procedure is robust to pluralism, it should accept all possible combinations of individual opinions as admissible, as long as each opinion is itself consistent. This appears to include the instance in which all the assembly members unanimously choose to reject the ban. If

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[48] If these assembly members were, on the other hand, to *rank* their opinions in an order of preference, the *incommensurability*, instead of merely the incompatibility, of these opinions would also be a matter of concern. See, for instance, the plastic bag example in Chapter 5.

this is the case, the decision procedure should respect their unanimous choices and produce the collective decision to reject the ban. However, this contradicts the designated green decision.

How can we circumvent the dilemma of green democracy by relaxing robustness to pluralism? In collective decision-making, pluralism differs in kind with different types of agenda. An agenda is a set of issues under consideration for a collective decision, which may be as simple as a choice between two alternatives or may also be more complex, requiring judgments on a number of propositions. To decide whether to support or reject the statutory ban is a choice problem. If, however, the members also have to decide on the underlying reasons for their choices, such an agenda is escalated to a judgmental problem involving several interconnected propositions. This will be addressed in more detail in Section 2.3.

At the same time, pluralism also varies in level. Depending on the context, there may be different levels of disagreement between individual opinions. In a cohesive group in which individuals share similar attitudes towards an issue, they are likely to submit opinions which resemble each other. If all the assembly members share a common vision of protecting the environment, they will probably agree to support the ban. In this case, the level of pluralism is minimal. On the other hand, in a deeply-divided group, we can expect individuals to hold very different opinions, and their disagreements may not be easily resolved. The level of pluralism, hence, becomes relatively higher. An example is when the assembly members have mutually incompatible reasons for supporting or rejecting the ban. Therefore, the level of pluralism is more or less context-dependent rather than absolute.

As the kinds and levels of pluralism vary, it is possible for a decision procedure to exhibit different degrees of robustness across different circumstances. Realistically, it is not necessary for a decision procedure, in order to be workable, always to follow strictly the condition of robustness to pluralism. In other words, a decision procedure may simply cope with the diversity of individual opinions in a particular context instead of all logically possible opinions. If it happens that the assembly members tend to make a unanimous choice regarding the statutory ban, it is sufficient for the decision procedure to function by handling only one kind of pluralism (i.e., choice problem) at its minimal level (i.e., unanimity).

As argued, we can relax robustness to pluralism by either exogenous or endogenous domain restrictions. In order to restrict the domain exogenously, some

individual opinions are dismissed so that they are no longer admissible to the decision procedure. This is the eco-filtering proposal, as above. In order to restrict the domain endogenously, by contrast, no opinions are barred from the outset, but some may be transformed in such a way that they become admissible. This is the eco-transformation proposal.

Alternatively, if the application of the decision procedure is limited to contexts where all individual opinions are already green, this is another form of endogenous domain restriction, i.e., contextual congruence. Such contexts may be found in places with sufficiently green-minded individuals, such as where people are accustomed to green lifestyles, where people are passionate about the environment, or where people are simply in close proximity to nature. We can imagine, for example, that people inhabiting the countryside or nature enthusiasts tend to be more conscious about the environment. If we are concerned about collective environmental decision-making *only* in these contexts with sufficient green opinions, we probably do not need to work on the input condition of the democratic process in order to obtain green outcomes.

However, in the contemporary liberal context, we are usually faced with conflicting values in environmental decision-making, which can contribute to both green and non-green opinions. To ensure green outcomes from a democratic process, we may modify the input condition of democracy by eco-filtering or eco-transformation. To exercise eco-filtering, we set out a standard to determine what inputs, if any, qualify to be admissible. For example, the standard can be as direct as "all inputs admitted should be in support of the statutory ban", which is justifiable by certain normative or moral principles. Based on such a standard, we exclude any non-green opinions from consideration by voiding any votes for rejecting the statutory ban. What remain are, therefore, merely votes which support the ban. The decision outcome, in this way, will always be to support the ban, which is the green outcome. The dilemma of green democracy is then circumvented (though, admittedly, perhaps not in the most democratic way).

On the other hand, in order to exercise eco-transformation, we may treat the above standard as the goal of the transformation process. As mentioned, the proposal can be realised through deliberation, education and/or publicity, and we can persuade individuals to change any non-green opinions to green opinions. Suppose all the assembly members originally reject the statutory ban. They then deliberate among

themselves and recognise that supporting the ban may be more justifiable than rejecting it. *If*, after deliberation, all the members choose to revise their opinions accordingly so as to support the ban, *then* the decision outcome will be green, which avoids the dilemma of green democracy.

Figure 2.1 summarises the three kinds of domain restrictions covered above.

Exogenous and endogenous domain restrictions

Exogenous
Eco-filtering
(e.g., voiding non-green votes)

Endogenous

Eco-transformation
(e.g., deliberation;
education; publicity)

Contextual
congruence
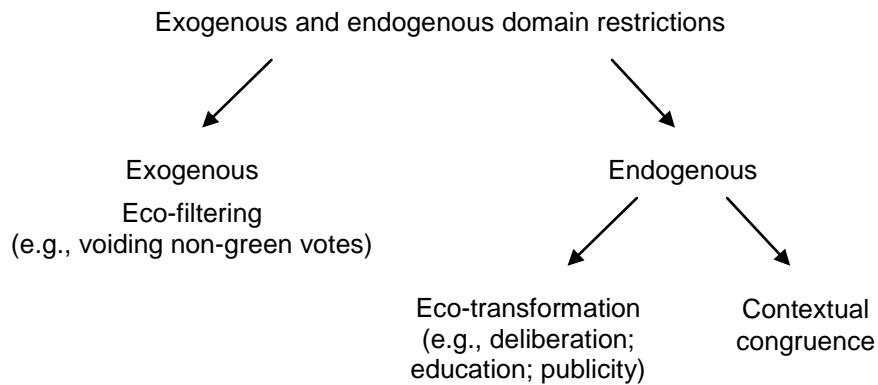
Figure 2.1: Topology of exogenous/endogenous domain restrictions

All in all, it is possible to avoid the dilemma of green democracy by relaxing robustness to pluralism. The domain of individual opinions may be restricted either exogenously or endogenously in such a way that the decision procedure only needs to handle a reduced level and kind of pluralism. Domain restrictions can be achieved by contextual congruence; or they can be realised through eco-filtering and eco-transformation. While eco-filtering excludes any individual non-green opinions from consideration (e.g., through voiding non-green votes), in eco-transformation, a mechanism, such as deliberation, is in place to change any non-green opinions to green opinions. In order to avoid the dilemma of green democracy, both eco-filtering and eco-transformation should aim to produce a domain which contains only, or at least sufficient, green opinions.[49]

In the following sections, I shall focus on eco-filtering as well as eco-transformation in which we modify the input condition of a democratic decision procedure in order to obtain green outcomes. I shall ask whether the two proposals are normatively desirable from the perspectives of procedure and outcome.

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[49] As to what counts as 'sufficient', this will be addressed in the following sections.

2.2 The desirability of relaxing robustness to pluralism: Outcome-based perspective

To assess the normative desirability of eco-filtering and eco-transformation, it is necessary, first of all, to arrive at certain basic principles or benchmarks. Generally speaking, we may evaluate whether an idea, action or institution is normatively desirable from two different perspectives. These are constraint-based and outcome-based perspectives.

An outcome-based evaluation, as the name implies, focuses on whether the outcomes of the idea, action or institution concerned are desirable. By contrast, a constraint-based evaluation examines how the outcomes are brought about, for example whether the process undergone is inclusive and fair. Green democracy is desirable if its outcomes are green (i.e., the condition of green outcomes), and if these are, at the same time, generated under conditions of robustness to pluralism and consensus preservation. Since this possibility is overridden by the dilemma of green democracy, we, instead, require a desirable environmental decision procedure to fulfil any two of the three conditions.

For the moment, let us concentrate on the outcome-based evaluation. Given that the condition of robustness to pluralism is relaxed, a desirable environmental decision procedure should at least satisfy the following benchmark:

(BO) Green outcomes: The decision outcomes are green (prioritising, or are at least consistent with, environmental sustainability).

Benchmark (BO) mirrors the condition of green outcomes in green democracy. If an environmental decision procedure with a restricted domain is able to deliver green outcomes, it fulfils benchmark (BO), and hence is desirable from the outcome-based perspective. For example, if, by filtering out non-green opinions, the only opinions which remain in the domain are all green, then benchmark (BO) is satisfied. Likewise, if, by deliberation, education or publicity, all the individuals are persuaded to revise their opinions from non-green to green, then benchmark (BO) is also satisfied.

At first sight, the idea of domain restrictions entails the generation of green outcomes. After all, a restricted domain is supposed to contain only qualified (or

green) opinions. As long as the condition of consensus preservation holds, the decision outcomes must follow from the unanimous opinions in the domain. Therefore, there may be an impression that green outcomes are always obtainable by relaxing robustness to pluralism.

Nevertheless, for eco-transformation, it is far from realistic to expect deliberation/education/publicity to deliver unanimously green opinions under all circumstances. Throughout the transformation process, it is up to the individuals to choose whether to adopt the green opinions, and thus it is entirely possible that some of them will remain unconvinced and insist on non-green opinions. From our everyday experience, it is not difficult to imagine that people will keep consuming plastic bags or driving private cars even after government and environmental groups have attempted to educate the public to do otherwise (e.g., through the media and other activities in the community).

In addition, even for eco-filtering, it may be the case that there are *only* non-green opinions in the domain, and that if all these non-green opinions are filtered out the domain becomes empty. Suppose all the assembly members, for whatever reason, unanimously reject the statutory ban. Then, all the votes are non-green, and if all are voided there will be no single (green) decision-making vote. In this case, there is still no way we can obtain a green outcome which supports the ban. If no green opinion is available in the first place, it would be impossible to generate a green outcome simply by eco-filtering.

We can see that, in order for eco-filtering and eco-transformation to satisfy benchmark (BO), the existence of green individual opinions in the domain must be *possible*. In other words, whether we can obtain green outcomes by eco-filtering or eco-transformation depends crucially on whether there is/are any individual(s) holding the green opinion, and the latter is a pre-requisite of the former. Under what circumstances may this pre-requisite be present so that we can obtain green outcomes by eco-filtering or eco-transformation? This question is important insofar as we are concerned about how both proposals can ensure green outcomes from a democratic process. To answer this, we have to look into the specific nature of *environmental* decision-making.

The context of environmental decision-making

Most environmental issues involve the provision and/or consumption of environmental goods. A decision to plant more trees concerns the active provision of environmental goods, i.e., trees, or the carbon absorption capacity of the atmosphere. By contrast, a decision to remove trees is an example of the active consumption of environmental goods, i.e., trees. On the other hand, a decision to switch off idle car engines concerns the passive provision of environmental goods, i.e., the reduction of greenhouse gases for absorption by the atmosphere, whereas a decision to let car engines idle is an instance of the passive consumption of environmental goods, i.e., the emission of greenhouse gases for absorption by the atmosphere.

Broadly speaking, environmental goods are distinguished from other economic goods as being non-excludable. A good is non-excludable if it is impossible, or very costly, to reject individuals who do not provide the good from consuming it. Some environmental goods are also, at the same time, non-rivalrous. A good is non-rivalrous if its consumption by an individual does not diminish it for consumption by other individuals. (Environmental) goods which are both non-excludable and non-rivalrous are public goods, for example, natural landscape or scenery. On the other hand, some (environmental) goods are non-excludable but rivalrous, or common pool resources (Ostrom, 1990). Examples include trees in forests or the atmosphere as a 'sink' for greenhouse gases.

When deciding whether to provide an environmental good, an individual recognises that he/she has to bear a private cost. This can be the time and energy spent in planting trees or the tolerance of heat when switching off idling engines (and hence air-conditioners) while waiting. At the same time, the effect of having more trees planted or more idling engines switched off is shared among other individuals. In other words, there is a public benefit. Conversely, when deciding whether to consume an environmental good, an individual recognises that he/she can acquire a private benefit. This may be timber from cutting down trees or the comfort of air-conditioning from an idling engine while waiting. However, the effect of deforestation or excessive greenhouse gas emissions is shared with some other individuals, and thus there is a public cost.

Therefore, in order to achieve green outcomes at the collective level (specifically for the requirement of consensus preservation), it is necessary to have some individual(s) who, having considered the corresponding cost and benefit,

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choose(s) to provide certain environmental goods. Alternatively, there must be some individual(s) who choose(s) not to consume certain environmental goods. The question is, then, whether either of the above cases will occur so that green outcomes are obtainable at all through eco-filtering and eco-transformation.

A pessimistic response

Olson (1965) and Hardin (1968) offer a pessimistic response. Hardin (1968) introduces the idea of the 'tragedy of the commons' as a result of individuals being incentivised to over-consume environmental goods or common pool resources. He considers a pasture open to all farmers. By grazing cows on the pasture, each farmer would privately benefit at no private cost. As long as the pasture can feed the number of cows grazed, the more the cows he/she grazes, the more private benefit each farmer will receive. If each farmer desires *only* to maximise his/her private benefit, it will be rational for him/her to graze as many of his/her cows on the pasture as possible. Therefore, each farmer will keep grazing more cows until the pasture can no longer feed all the cows grazed by all the farmers. The overgrazing as such is one instance of the tragedy of the commons, which is clearly not a green state of the world.

The concept of the tragedy of the commons assumes that each farmer does not contribute (sufficiently) to maintaining the pasture in such a way that overgrazing is avoided. This is similar to the case of the emission of greenhouse gases into the atmosphere. If each individual contributes to reducing the greenhouse gases he/she emits, for instance, by switching off idling engines, there may not be any excessive emissions of these gases. The problem is that, in order to contribute to maintaining the common pool resources or to providing the corresponding public goods, each individual has to bear all the associated cost privately.

At the same time, other individuals may share the public benefit without contributing any of these common pool resources or public goods. This is also regarded as free-riding. If each individual desires *only* to maximise his/her private benefit, it will be rational for him/her to free-ride. Olson (1965) describes this situation as a collective action problem, with no individual being sufficiently incentivised to contribute any of these common pool resources or public goods, which is, again, not a green state of the world.

What does Olson's and Hardin's pessimistic response tell us about the possibility of eco-filtering and eco-transformation? If no individuals are *ever* willing to contribute to the provision of common pool resources or public goods *under any circumstances*, it seems unlikely that they will prefer, and vote for, any collective decision outcomes that require them to make such contributions. On the other hand, if individuals are at least *sometimes* willing to make contributions, then perhaps *a fortiori* they will also vote for the relevant policies.

Consider again the 'Enviro Island' scenario about idling vehicles. Suppose the statutory ban proposal has not been put to the public, but the government is encouraging people in the city to voluntarily switch off idling engines. Meanwhile, there are a group of taxi drivers who always need to wait for passengers at an *indoor* taxi stand, and, while waiting, they idle their car engines for air-conditioning. If a driver thinks that he/she, together with other people, should switch off idling engines, then he/she is said to hold a green opinion, and he/she is bound to act accordingly.

Here, we are interested in whether drivers will choose the green opinion on switching off idling car engines. If the pessimistic response is accurate, there will be no driver who takes up the green opinion voluntarily. Then, we can reasonably expect that, when these drivers are asked to make a collective decision on the statutory ban, no green opinions will be available in the domain. This implies that we are unable to obtain green outcomes by eco-filtering, since, after voiding all the non-green votes, there will be no single vote left. Moreover, if these drivers can *never* be convinced to change their opinions from non-green to green, then we cannot obtain green outcomes by eco-transformation either. Will these drivers *ever* choose to be green? Such individual choices are crucial to the desirability of eco-filtering and eco-transformation in producing green collective outcomes.

Let us pick two drivers and examine how each of them will reason in making a choice about whether to switch off his/her idling engine. If both drivers switch off their engines, they will both benefit from the better air quality at the indoor taxi stand. On the other hand, they will also benefit from not switching off their engines due to the comfort of air-conditioning that they can continue to enjoy. Each of them will benefit most if he/she does not switch off his/her own engine, but the other driver does, since he/she will not then bear any of the cost of the better air quality. Conversely, each of them will benefit least if he/she switches off his/her own engine

but the other driver does not, since he/she will then bear all the cost of the better air quality.

We may first assume, for the sake of argument, that both drivers *independently* make their choices for only a *single* shot. At the same time, each driver will base his/her choice purely on the principle of maximising private benefit. This means that he/she will choose to switch off (or not to switch off) his/her own engine only if this leads to an 'outcome' which maximises his/her own benefit. If they choose to switch off their engines, they 'cooperate'; if they choose not to switch off their engines, they 'defect'. Both drivers' choices will affect the outcome which determines the benefit each driver will receive, or the 'payoffs'. Furthermore, both drivers know all the possible outcomes, and they understand that each of them will choose, as assumed, by maximising his/her own payoffs. Table 2.1 shows all the possible outcomes and the corresponding payoffs.

Will the drivers cooperate? If each chooses according to the principle of maximising his/her private benefit, he/she will prefer outcomes which produce more payoffs for himself/herself. From Table 2.1, driver *A* can receive three units from Outcome (III), two units from (I), one unit from (IV), and nothing from (II). On the other hand, driver *B* can receive three units from (II), two units from (I), one unit from (IV), and nothing from (III). Therefore, driver *A* will prefer (III) to (I) to (IV) to (II), whereas driver *B* will prefer (II) to (I) to (IV) to (III).[50]

| | | **Driver B** | |
		Cooperate	Defect
Driver A	Cooperate	Outcome (I) *A*: 2 *B*: 2	Outcome (II) *A*: 0 *B*: 3
	Defect	Outcome (III) *A*: 3 *B*: 0	Outcome (IV) *A*: 1 *B*: 1

Table 2.1: Drivers' choices and the possible outcomes and payoffs

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[50] We also assume that the preferences of both drivers satisfy the consistency requirements of asymmetry and transitivity. Asymmetry is satisfied if, for example, a driver who prefers (III) to (I) does not simultaneously prefer (I) to (III). Transitivity is satisfied if, for instance, a driver who prefers (III) to (I) and (I) to (IV) also prefers (III) to (IV).

In order to avoid the least preferred outcome, i.e., (II), driver *A* must not choose to cooperate since there is a chance that driver *B* will choose to defect. Similarly, if driver *B* wants to avoid the least preferred outcome, i.e., (III), he/she must not choose to cooperate since driver *A* may choose to defect. At the same time, by choosing to defect, driver *A* can at least get his/her third preference even if driver *B* chooses to defect, i.e. (IV); but driver *A* may also get his/her first preference when driver *B* chooses instead to cooperate. Likewise, if driver *B* chooses to defect, at least he/she can get his/her third preference from (IV), and there is a chance that he/she will get his/her first preference from (II).

Since both drivers prefer the outcomes of defecting to the outcomes of cooperating, each of them will choose to defect regardless of what the other chooses. When both drivers choose to defect, the total payoffs will be two units, but this is smaller than the payoffs from the remaining outcomes. Outcome (IV) represents a situation in which no driver holds the green opinion on switching off the idling engines, and all benefit the least possible as a result of the worsened air quality. This is the celebrated prisoners' dilemma in rational choice theory, which captures the essence of the tragedy of the commons or the collective action problem.[51]

If the above analysis is correct, *then* it is very unlikely that there is any individual who will be willing to provide, or not to consume, certain environmental goods. The prisoners' dilemma illustrates that a non-cooperative outcome can arise when individuals *independently* make decisions on their own behaviour. These non-cooperative individual decisions can be understood broadly as a form of non-green opinion. When it comes to making *collective* decisions, *if* all these individuals submit the same non-green opinions, *then* there will be no green opinion in the domain. In this case, there is no way to obtain green outcomes by filtering out non-green opinions; and if individuals can never be convinced to revise their opinions from non-green to green by deliberation, education or publicity, green outcomes cannot be achieved by eco-transformation either. Therefore, according to Olson's and Hardin's pessimistic response, neither eco-filtering nor eco-transformation will generally

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[51] Notice, here, that such prisoners' dilemma arises on the assumption that individual drivers *independently* make their choices for only a *single* shot. In this way, no drivers have the knowledge about what the other driver would choose based on either past choices or mutual agreement, and hence they cannot make their choices conditional on that of the other driver. While this assumption may not necessarily be in place in the real-world context, it is introduced here merely for the sake of argument. As a matter of fact, the prisoners' dilemma, or the collective action problem, can be resolved through 'tit-for-tat' conditional cooperation. See the discussion below, and also Olson (1965) and Ostrom (1990).

satisfy benchmark (BO), and they will thus not ensure green outcomes from a democratic process.

An optimistic response

While individuals may, on the grounds of maximising private benefit, tend to hold non-green opinions, it can be an exaggeration to say that *all* individuals will choose to do so under *all* circumstances. From our empirical experience, there are at least some instances where people will show a positive attitude towards environmental protection and be willing to adopt a green way of living (e.g., by adopting habits of recycling and energy saving). We can, therefore, postulate that green opinions are still possible in spite of the tragedy of the commons/collective action problem. If this is the case, we may be able to obtain green outcomes in collective environmental decision-making by eco-filtering or eco-transformation.

From an optimistic point of view, we shall consider how individuals can be incentivised to submit green opinions, as well as under what conditions this will happen. Note from Table 2.1 that, when both drivers cooperate, each receives two units of payoffs, which is more than each receives when both defect (i.e., 1 unit). Even so, the players will not choose to cooperate because they will act according to the principle assumed above, i.e., each driver will choose solely on the basis of maximising his/her private benefit, and each knows that the other driver will also do so. Nevertheless, once such a principle is changed, the choices of both drivers may no longer be the same.

Let us assume that each driver chooses purely on the basis of a revised principle of maximising not his/her private benefit but the public benefit. In other words, each driver will no longer prefer outcomes which maximise his/her own payoffs but those which maximise the total sum of payoffs for both drivers. In this case, both drivers will choose to cooperate because doing so results in the maximum total payoffs, i.e., 4 units from (I). This represents a situation in which both drivers will choose to switch off their idling engines, and both will benefit maximally from the achievement of a collective good, i.e., better air quality. Therefore, as long as both drivers choose according to the revised principle, both will hold the green opinion on switching off the idling engines.

But when will the drivers choose according to the revised, rather than the original, principle? The most convenient case is that both drivers voluntarily adopt

the revised principle in reasoning while making their choices. This is possible when they are motivated by certain normative or moral values which prioritise the collective good over their private good. For example, if the drivers believe that they should not perform any actions which make other people suffer in return for their own personal enjoyment. Then, we can expect that they will choose whether to cooperate or defect according to such a normative belief. A situation like this may arise when communal or altruistic values are stressed, or when peoples' choices are guided more or less by normative or moral values and beliefs. We can, therefore, postulate that people in such context would tend to hold green opinions. When they are asked to make collective decisions on environmental issues, it is likely that green opinion(s) will be available in the domain. Hence, in this context, since green opinions are, first of all, *possible*, we may obtain green outcomes by eco-filtering or eco-transformation.

However, for cooperation to occur, it is not necessary for both drivers to choose *according to the revised principle*. Instead, we may adopt a very straightforward (negative) incentive: coercion (Olson, 1965). With coercion, the choices of individuals are restricted by prohibiting certain options. This mirrors what Hardin (1968) suggests as 'mutual coercion, mutually agreed upon' in resolving the tragedy of the commons, in which peoples' choices are limited and give way to central regulation and enforcement.[52] To realise this, one easy approach is to allow drivers to choose only to cooperate but not to defect; otherwise they may be sanctioned. In this way, we ensure that both drivers will choose to cooperate, regardless of the principle on which they base their choices. An example of this is a law which stipulates that all idling engines must be switched off (which exists prior to the statutory ban proposal).

Apart from coercion, we may adopt selective incentives so that individuals have a reason to choose to cooperate (Olson, 1965). On the one hand, we can significantly increase the (relative) cost of defection as long as others choose to cooperate. For example, this can be done by deducting a certain amount in payoffs from the driver who chooses to defect in (II) and (III). On the other hand, the driver who chooses to cooperate in (II) and (III) can also be rewarded with an additional

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[52] Notice that Hardin's 'mutual coercion, mutually agreed upon' solution to the tragedy of the commons can also be interpreted as restricting the decision power of citizens in *collective* environmental decision-making, i.e., eco-authoritarianism. See Chapter 3 for detail.

amount in payoffs. Then, both drivers will be incentivised to choose to cooperate, since each will have to bear a higher cost if he/she chooses to defect but the other driver chooses to cooperate. An example of such incentives could be initiating a campaign to boycott drivers who do not switch off idling engines. By applying selective incentives, we can expect that individuals will be more likely to cooperate, but it is still possible that they will choose to defect as long as they are willing and able to bear the corresponding cost.

In sum, there are different ways in which we can resolve the prisoners' dilemma or the tragedy of the commons/collective action problem. It may be the case that individuals will choose whether to cooperate or defect on the basis of a principle which maximises public instead of private benefit. Alternatively, they may be coerced into choosing to cooperate, or motivated to do so by selective incentives. Therefore, it is possible, or sometimes even very likely, that individual(s) will choose to hold a green opinion on the question of cooperating in the provision and/or consumption of environmental goods. As long as such green opinion(s) is/are present in the domain of collective decision-making, green outcomes are obtainable by eco-filtering or eco-transformation.

Implications for eco-filtering and eco-transformation

What does the above discussion tell us about the desirability of relaxing robustness to pluralism from the outcome-based perspective? To reiterate, eco-filtering and eco-transformation, in order to be desirable, should generate green decision outcomes, i.e., satisfying benchmark (BO). As pointed out, a minimal condition of this is that green opinion(s) must be available in the domain. While the pessimistic interpretation of the prisoners' dilemma denies such a possibility, the optimistic response views the dilemma as resolvable since some individual(s) will hold the green opinion. In the latter case, when these individuals are to make collective environmental decisions, it is likely that green opinion(s) will be in place, and then we may adopt eco-filtering or eco-transformation in order to achieve green outcomes. The optimistic response, therefore, affirms the possibility of both proposals producing green outcomes.

Eco-filtering requires some green opinion(s) to exist in the domain in order to generate a green outcome. In other words, we need to make sure that some

individual(s) will vote green so that there is at least a mixture of green and non-green votes. In this way, we may disqualify all the non-green votes and accept only the green vote(s) as admissible input(s). According to the optimistic response, this is realisable if we can induce individuals to provide, or to refrain from consuming, certain environmental goods.

From a democratic point of view, the least appealing approach is to coerce individuals to choose to cooperate by, say, criminalising idling car engines. In collective decision-making, similarly, the option of rejecting the statutory ban may be eliminated from the beginning. As long as the only option on the ballot is to support the ban, and assuming that no individual abstains, eventually there will only be green votes. We can then ensure that eco-filtering will produce green outcomes. However, the trade-off is that individuals will effectively have no choice to do otherwise, unless they are willing and able to resist the coercion (e.g., by breaking the law or disobeying the rules governing decision-making).

Another approach is to incentivise individuals to choose to cooperate. For example, individuals may be offered subsidies for installing 'start-stop systems' in their vehicles.[53] Alternatively, they may also be disincentivised from choosing to defect, for example, through a campaign which encourages people to report and boycott taxi drivers who idle their engines. As in collective decision-making, individuals may be stigmatised by the community if they choose to reject the statutory ban and/or publicly commended if they choose otherwise. In either case, it is *likely* that some individual(s) will, as a response, vote green. However, the drawback is that there is no guarantee that these (dis)incentives will always be successful in bringing about green opinions. If there is no green opinion in the domain, even after these (dis)incentives are introduced, green outcomes still cannot be generated by eco-filtering.

Now, consider eco-transformation. In contrast to eco-filtering, this does not have to rely on coercion or selective incentives to ensure the availability of green opinion(s). Instead, it transforms opinions through such mechanisms as reasoned debate and discussion as in deliberation, education and/or publicity. Possible examples include media programmes, public forums, town hall meetings, educational

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[53] A start-stop system is a device which automatically shuts down and restarts the internal combustion engines in vehicles. It has been widely used in recent years to reduce the instances of idling car engines.

campaigns and community projects. These transformation mechanisms aim to provide new information and/or arguments so that individuals revise their values, beliefs and/or choices from non-green to green as a result of accepting these. For example, through information provision, individuals may begin to realise how much pollution they have been creating by idling their engines. Through argumentation, individuals may start to reflect about idling engines. Broadly speaking, education and publicity focus more on information provision, whereas deliberation usually involves both information provision and argumentation. What they share is that individuals remain largely free to choose whether to change their opinions after deliberation/education/publicity.

Will individuals, say, after deliberation, choose to cooperate or adopt the green opinion? From the optimistic response to the prisoners' dilemma, we know that an individual will cooperate if they choose according to the revised principle which maximises public, but not private, benefit, regardless of what the other individual chooses. This is unconditional cooperation. Alternatively, they may choose to cooperate if, and only if, the other individual does so as well. In this case, individuals do not necessarily choose according to a particular principle, but their choices are, instead, conditional on the choice of the other. This is conditional cooperation.

On the one hand, deliberation can realise unconditional cooperation. It is widely claimed, in theory, that the public and other-regarding nature of deliberation motivates and encourages individuals to formulate preferences and justifications which focus more on collective interests than on (merely) individual benefits (Smith, 2001; Arias-Maldonado, 2007). In particular, it is argued that, through the reason-giving process of deliberation, individuals will acknowledge environmental protection as a generalisable interest which has priority over other normative values and principles (Dryzek, 1987; Smith, 2001) as well as taking into account the interests of future generations and non-human entities (Goodin, 1996; Eckersley, 1998; Dryzek, 2000). This speaks of the 'moralising effect' of deliberation (Miller, 1992), where individuals believe that what is right, i.e., holding green opinions, is also rational. Since each individual acts according to this independent belief, it is not necessary for deliberation to provide individuals with a guarantee that other individuals will cooperate before they choose to do the same.

On the other hand, deliberation can also lead to conditional cooperation. It has been found that social interaction between individuals in a group may promote those

individuals' cooperative actions (Dryzek and List, 2003). There is robust empirical evidence from social psychology showing that individuals, in the one-shot prisoners' dilemma, tend to choose to cooperate rather than to defect after a period of discussion within the group (Dawes, McTavish and Shaklee, 1977; Dawes, van de Kragt and Orbell, 1988; Dryzek, 1987). This can be explained by the fact that deliberation provides an interface for individuals to make multi-lateral promises that they will make certain choices, or act according to a certain standard of rationality, e.g., the 'revised' principle (Dawes, van de Kragt and Orbell, 1990; Dryzek and List, 2003). In this way, individuals can adopt a 'tit-for-tat' strategy, and choose to cooperate, if they know that other individuals will do the same.

While deliberation (and, similarly, education and publicity) can motivate individuals to change their opinions from non-green to green, whether the eco-transformation proposal at large satisfies benchmark (BO) remains context-dependent. This is because, even if individuals tend to choose to cooperate after the transformation process, it is entirely possible that they will choose to defect as long as they are left free to do so. In other words, there is no guarantee that deliberation/education/publicity will always change individual opinions from non-green to green. If, after deliberation/education/publicity, there is still no green opinion in the domain, then we cannot in any way obtain green outcomes from a democratic process which preserves consensus.

Summary

In this section, I have considered the desirability of relaxing robustness to pluralism from an outcome-based perspective. Ideally, we expect the two proposals for domain restriction, i.e., eco-filtering and eco-transformation, to produce green outcomes under all circumstances (i.e., benchmark (BO)). However, it is entirely possible that there will be no individual holding the green opinion in the first place, and thus green outcomes will not be obtainable by eco-filtering or eco-transformation. It is necessary for some individual green opinion(s) to be already present in the domain. I have illustrated, based on the prisoners' dilemma, how we can ensure the availability of green opinions as well as how we can realise both eco-filtering and eco-transformation accordingly.

The general conclusion is that whether benchmark (BO) is satisfied for both proposals depends very much on circumstances. Eco-filtering is realisable whenever some individual(s) is/are directed to take up the green opinion, which can be achieved by coercion and/or selective incentives. As for eco-transformation, this is contingent on whether individuals can be convinced to change their opinions from non-green to green after deliberation/education/publicity.

2.3 The desirability of relaxing robustness to pluralism: Constraint-based perspective

In the previous section, I discussed, from an outcome-based perspective, whether it is desirable to relax robustness to pluralism. Now, I turn to assessing the conditions under which green outcomes, if any, are generated from an *aggregation procedure* used in eco-filtering and eco-transformation. An aggregation procedure (e.g., simple majority rule) is necessary in order to put together individual opinions, which are filtered or transformed, in a collective decision. To carry out this assessment, we keep the condition of consensus preservation in place, and compare how an aggregation procedure used in each proposal *departs* from certain normative, outcome-independent benchmark(s) regarding the input condition for a desirable democratic process for environmental decision-making.

From a democratic point of view, a desirable decision procedure should, arguably, be in line with a certain requirement for inclusiveness. This requires that individuals should be able to put forward and submit to the procedure their choices on the decision alternatives. At the same time, for green democracy specifically, if the domain of individual opinions is restricted, the scope of domain restrictions should be kept minimal. One reasonable demand would be that, for the sake of generating green outcomes, no green opinions, but only non-green opinions should be excluded or required to be changed. In other words, we expect that a desirable decision procedure for environmental decision-making should attempt to satisfy the following condition:

> **(BGI) (Green) inclusiveness:** All individuals are granted the same opportunity to express their opinions on the decision alternatives (and

whilst *all* opinions should be accepted as admissible, no green opinions, *in particular*, may be excluded or required to be changed).

Benchmark (BGI) is formulated on the basis of a prominent view that, in any democratic arrangements or institutions, all individual decision-makers should be ensured an equal and effective opportunity to express what they think about the decision alternatives (e.g., Dahl, 1979). We can interpret the benchmark as constituting three aspects. Firstly, all individuals relevant to the decision issue concerned should have an equal opportunity to participate in decision-making. Secondly, all kinds of opinions that individuals hold should be equally accepted as admissible to the decision procedure. Thirdly, all opinions, unless they are non-green, should be retained in the domain in order to maximise the level of inclusiveness. The third aspect is especially relevant for green democracy with domain restrictions where green opinions are secured in order to ensure green outcomes.

By definition, eco-filtering implies that certain non-green opinion(s) in the domain will be, from the very beginning, dismissed in order to generate green outcomes. Thus, the second aspect of benchmark (BGI) is not satisfied. Moreover, if it happens that a non-green opinion exists in a particular domain, there will be at least a single individual who holds that opinion. When the non-green opinion is filtered out, this is equivalent to a situation when the individual holding that opinion is unable to participate in the decision-making. For example, if only Member 1 of the assembly rejects the statutory ban, with eco-filtering, his/her non-green vote will be discarded and he/she will effectively lose the power to influence the decision outcome along with the rest of the members. With eco-filtering, therefore, the first aspect of benchmark (BGI) is not satisfied either.

As for eco-transformation, while this does not accept certain unqualified opinions as admissible, it does not reject any individuals from participation. This is because eco-transformation aims merely to change a certain number of non-green opinions to green opinions. Hence, there is no need to dismiss any non-green opinions from the outset, and individuals may still choose to hold non-green opinion even after deliberation/education/publicity. In other words, no individuals will be excluded, and they will remain free to hold any opinions and submit these for decision-making accordingly. Hence, eco-transformation departs less from benchmark (BGI) than eco-filtering.

If, with eco-filtering, it is unavoidable to exclude certain individuals who hold a non-green opinion from participating in decision-making, an aggregation procedure which minimises the number of such individuals is apparently more desirable. This depends on how the aggregation procedure in question responds to individual opinions. Consistent with consensus preservation, it may respond with simple majority rule, unanimity rule or even dictatorship.[54] For the moment, let us focus on the former two responsive rules which are often regarded as democratic.

Generally speaking, in order to obtain a green outcome, the number of individuals holding a non-green opinion who will have to be excluded is fewer for simple majority rule than for unanimity rule. It is straightforward to illustrate this. Suppose there are five assembly members in total, where two of them support the statutory ban and the other three reject it. If the decision outcome has to be green, simple majority rule only has to exclude two of the individuals with the non-green opinion. However, for unanimity rule, it must exclude all the three individuals with the non-green opinion.

Therefore, with eco-filtering, simple majority rule is relatively more inclusive than unanimity rule, and hence the former departs less from benchmark (BGI) than the latter. At the same time, simple majority rule is more likely to realise eco-transformation than unanimity rule. If unanimity rule is adopted, a green outcome is available only when all assembly members are convinced to take up the green opinion after deliberation/education/publicity; however with simple majority rule, green outcomes are possible whenever three, four or five members are convinced.

We can note that, with both eco-filtering and eco-transformation, simple majority rule is generally more desirable than unanimity rule in the procedural sense. In order for eco-filtering to generate green outcomes, the decision procedure is more inclusive, and hence departs less from benchmark (BGI), if simple majority rule is used. With eco-transformation, while this departs less from benchmark (BGI) than eco-filtering, it is easier to realise when simple majority rule, rather than unanimity rule, is used.

Nevertheless, can we conclude that eco-transformation is always more procedurally attractive when simple majority rule is used to aggregate individual opinions? This question concerns us since, by adopting eco-transformation, we want

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[54] The responsiveness condition of a decision procedure will be discussed in further detail in Chapter 3.

to achieve green outcomes with a process or procedure which is sufficiently democratic, and simple majority rule is, arguably, a widely accepted democratic aggregation procedure. Below I suggest that the answer depends on the types of decision agenda in question. I illustrate this claim with a model of the discursive dilemma from social choice/judgment aggregation theory. The analysis, having said that, lies less in the formal aspect of the model than in its implications for assessing the procedural desirability of eco-transformation.

Eco-transformation with green opinions on multiple propositions

As touched on in Section 2.1, an agenda can be, as well as an issue of choice, in a more complex form which involves judgments on a number of propositions. While value pluralism matters for collective decisions on choices between two or more alternatives, it is also relevant when incompatible values form at least part of the supporting reasons for those choices (or conclusions). In the 'Enviro Island' scenario, suppose some assembly members hold that the environment should be protected ('environmental protection') whilst others hold that the environment may be destroyed ('environmental destruction'). If they draw inferences from these values in choosing whether to support or reject the statutory ban, they are likely to come up with very different choices or conclusions. Thus, even if the decision agenda is as simple as whether to support or reject the ban, such a conflict of values still matters significantly for collective decision-making.

There are two possible complications. First, these incompatible values may not only influence the choices of individuals but also be included in the decision agenda. In other words, the decision agenda may be more complex, comprising supporting reasons, a conclusion and their interconnection. Second, value pluralism may still exist for the supporting reasons even if there is a unanimous agreement on the conclusion. In other words, it is possible for all the assembly members to unanimously support the statutory ban while disagreeing about the supporting reasons. Both complications are relevant to collective decision-making on any controversial issue, including environmental issues which involve much complexity and uncertainty.

Now, suppose there are five assembly members. All of them support the statutory ban ('ban'), and would like to reach a collective decision on *why* they do so

as a justification. After some deliberation, they arrive at three different supporting reasons:

(1) Idling vehicle engines wastes fuel, and we should not waste fuel ('fuel');

(2) Idling vehicle engines causes serious air pollution, and we should not do anything that causes serious air pollution ('air'); and

(3) Idling vehicle engines generates unnecessary heat, and we should not do anything that generates unnecessary heat ('heat').

They agree that any one of the three reasons is necessary and sufficient for the conclusion which supports the ban.[55] In other words, if a member chooses to accept any one of the reasons, he/she must also support the ban. In this way, we may also regard all three reasons, as well as the conclusion which supports the ban, as green opinions.

Consider the following case. The first member agrees with the 'fuel' reason, but not with the 'air' or 'heat' reasons. The second member holds the same opinions on all three reasons as the first member does. On the other hand, the third and fourth members believe that the 'air' reason is true, but the 'fuel' and 'heat' reasons are false. As for the fifth member, he/she accepts the 'heat' reason only and rejects the remaining two reasons. At the same time, all of them conclude that they support the ban. We can represent, as in Table 2.2, the above combinations of green opinions in terms of their judgments on the conclusion and the supporting reasons.

From Table 2.2, each of the members accepts only one supporting reason and rejects the remaining two reasons. Since they agree that any one of the three reasons is necessary and sufficient for a conclusion which supports the ban, they also unanimously accept the conclusion. Note that this can be an instance of eco-transformation where deliberation/education/publicity has been completed, and all members have been convinced to adopt green opinions on some of the propositions.

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[55] In a more technical language, it is: 'ban' if and only if ('fuel' or 'air' or 'heat').

Member	Supporting reasons			Conclusion
	Fuel?	Air?	Heat?	Ban?
1	Yes	No	No	Yes
2	Yes	No	No	Yes
3	No	Yes	No	Yes
4	No	Yes	No	Yes
5	No	No	Yes	Yes

Table 2.2: Example of green opinions in terms of judgements on conclusion and supporting reasons

How can we aggregate the above combination of green opinions into a collective decision? Let us set aside, for the moment, the individual opinions on the supporting reasons and focus only on the conclusion. Since the conclusion is accepted by all members, by using any aggregation procedure which preserves consensus (e.g., simple majority rule or unanimity rule), we can obtain a green outcome, i.e., the ban being collectively supported. Therefore, as long as the decision agenda is as simple as consisting of only the conclusion and there is a set of unanimously green opinions, then we can use either simple majority rule or unanimity rule to obtain a green outcome.

As mentioned, for decision agendas involving a choice between two alternatives, simple majority rule appears to be more procedurally appealing than unanimity rule for eco-transformation. Our question is, then, whether this is still the case for more complex decision agendas which involve multiple interconnected propositions, such as one containing the conclusion and supporting reasons in the example above.

A (discursive) dilemma

If we aggregate, using simple majority rule, the combination of green opinions as in Table 2.2, what will be the collective outcomes? First, the conclusion will obviously be accepted, meaning that the group will support the ban. Second, two members (1 and 2) accept the conclusion for the 'fuel' reason, whereas the three other members (3, 4 and 5) reject it, and hence, by simple majority rule, it is collectively rejected. Next, similarly, two members (3 and 4) accept the conclusion for the 'air' reason,

whilst the three other members (1, 2 and 5) reject it, and thus on these grounds also it should be collectively rejected. Lastly, only Member 5 accepts the conclusion for the 'heat' reason, whilst the remaining four members reject it, and thus, again, it should be collectively rejected. Table 2.3 below summarises the results.

Member	Supporting reasons			Conclusion
	Fuel?	Air?	Heat?	Ban?
1	Yes	No	No	Yes
2	Yes	No	No	Yes
3	No	Yes	No	Yes
4	No	Yes	No	Yes
5	No	No	Yes	Yes
Majority	No	No	No	Yes

Table 2.3: Example of aggregating green opinions on multiple interconnected propositions using simple majority rule

It is not difficult to spot a contradiction in the above collective decisions. Remember all the members have previously agreed that any one of the three reasons is necessary and sufficient for supporting the ban. Since the group rejects all the three reasons, by logical deduction the conclusion should be collectively rejected. At the same time, since all the members unanimously support the conclusion, it should be collectively accepted. Therefore, the collective decisions on the conclusion and supporting reasons are inconsistent with each other, and there arises a question about whether the group should support or reject the ban. This is one version of the celebrated discursive dilemma (Pettit, 2001; List and Pettit, 2002). Generally speaking, the dilemma arises whenever simple majority rule is used to aggregate individual judgments on agendas with multiple interconnected propositions (List, 2006).[56]

The dilemma above poses a hard question for eco-transformation with simple majority rule. It is possible that, after deliberation/education/publicity, while a majority, or even all, of the individuals agree on a green conclusion, they will still disagree over the supporting reasons *which can also be green*. For example, all three

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[56] Refer to Chapters 5 and 6 for more precise discussion of the discursive dilemma as well as its relation with other impossibility theorems in social choice/judgment aggregation theory.

supporting reasons above concerning 'fuel', 'air' and 'heat' are pro-environmental, and each of them is necessary and sufficient for a green conclusion, i.e., 'ban'. When a member accepts any of these green reasons, the reason(s) constitute(s) part of his/her green opinion. Then, there arises a question about how the diversity of green opinions can be preserved when, after aggregation by simple majority rule, there is a green outcome on the conclusion but non-green outcomes on the supporting reasons (which are logically connected to the conclusion). Given that it is unappealing for eco-transformation to abandon any green outcomes, there are broadly three possible approaches to response to the dilemma.

The first approach is to discard the non-green outcomes on the supporting reasons. In this way, the group would be able to retain the green outcome on the conclusion without being self-contradictory. However, this approach is not attractive *if* collective decisions on the supporting reasons are also required. One account of this is that, by having reasons collectivised, it becomes possible to assess and contest the soundness of the reasons which support the conclusion. Furthermore, when the group of individuals in question take actions based on the decisions, they become conversable in the sense that their actions/decisions can be justified by collective reasons (Pettit, 2001).

Whether it is desirable to give up the collective decisions on supporting reasons depends on the context under which the group makes decisions. Imagine that all members in a group are democratically elected by their constituencies, and hence, the former remain accountable to the latter. In this case, the group has to back its decisions up with shared justifications so as to answer any challenges raised by the constituencies. However, if the group is in no sense held accountable to any constituencies, or if the constituencies care only about the group's decisions on *specific* actions/policies but not the underlying reasons, then such requirement of conversability or shared justifications may not be necessary.[57]

The second approach is to use an alternative decision procedure. Recall that *democratic* aggregation procedures which preserve consensus include not only simple majority rule but also unanimity rule. When unanimity rule is used, any disagreement between individuals over any proposition(s) will result in the same

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[57] For example, Sunstein (1994) argues for the view of 'incompletely theorised agreements' which demands only a low level of abstraction for collective decisions, i.e., only the substantive decisions but not their underlying reasons.

proposition(s) being left undecided. This is because, according to unanimity rule, a proposition is collectively accepted or rejected if, and only if, there is unanimous acceptance or rejection of this proposition. For example, in Table 2.3, since the five members disagree on the three supporting reasons and unanimously accept the conclusion, under unanimity rule, there are no collective decisions on the supporting reasons but only on the conclusion. Therefore, the collective outcome will be green, and there will not be any contradiction. It is proved that unanimity rule can be used to avoid the (discursive) dilemma above (List, 2006). However, as pointed out, this makes the realisation of eco-transformation more difficult in terms of generating green outcomes.

The third approach is to selectively accept certain combinations of individual green opinions. This can be done by further restricting the domain so that a majority of individuals accept at least one supporting reason which is necessary and sufficient for the green conclusion. In other words, for eco-transformation, this aims at ensuring a sufficient number of green opinions not only on the conclusion but also on the supporting reasons. For instance, in Table 2.3, some members may be convinced, after deliberation/education/publicity, to accept a further supporting reason which they did not originally accept. This could be Member 3 changing his/her opinion on the 'fuel' reason from rejection to acceptance, or Members 3 and 4 shifting to accept the 'heat' reason instead of the 'air' reason, etc. In either case, there would be a majority acceptance of one of the supporting reasons, and hence the collective outcomes on all the propositions would become consistently green.

Nevertheless, by adopting the third approach, some combinations of green opinions would be excluded from consideration by the decision procedure. In this way, after deliberation/education/publicity, individuals might have to be convinced to give up their original opinions *even if these opinions were green*. For example, if Members 3 and 4 are convinced to change from accepting the 'heat' reason to accepting the 'air' reason, their original opinion on the 'heat' reason will no longer be accepted even if it is a green opinion. In that case, eco-transformation with simple majority rule departs from benchmark (BGI), since it does not satisfy the third condition that no opinions should be abandoned as long as they are green.

Therefore, to answer our previous question, whether eco-transformation with simple majority rule is procedurally desirable depends on the type of decision agenda. For agendas with multiple interconnected propositions, using simple majority rule for

aggregation may pave the way to the above (discursive) dilemma. [58] For environmental decision-making, if we further transform individual opinions in order to avoid the dilemma, some combinations of green opinions (e.g., acceptance of green supporting reasons) may have to be abandoned, which departs from our benchmark of (green) inclusiveness (BGI). In this way, the scope of domain restrictions for eco-transformation can, on some occasions, be wider than simply to require opinions to change from non-green to green. This issue is relevant to collective environmental decision-making insofar as the intense value conflict on environmental issues may give rise to complex decision agendas and disagreements over not only *whether* but also *why* we should be green, whilst we expect the decision procedure to remain as inclusive as possible.

2.4   Conclusion

In this chapter, I have examined how we may escape the dilemma of green democracy by relaxing the condition of robustness to pluralism. In Section 2.1, I explained how exogenous and endogenous domain restrictions may be realised as the eco-filtering and the eco-transformation proposals, respectively. While eco-filtering dismisses any non-green opinions from consideration (e.g., by voiding non-green votes), eco-transformation changes these opinions from non-green to green (e.g., by deliberation, education and/or publicity).

In Section 2.2, I assessed the normative desirability of eco-filtering and eco-transformation from an outcome-based perspective. I argued that each proposal is desirable in that sense only if it generates green decision outcomes (i.e., benchmark (BO)). Whether this benchmark can be fulfilled depends very much on circumstances, and there must, minimally, be green opinion(s) available in the domain. I have illustrated, using the prisoners' dilemma in rational choice theory, how both eco-filtering and eco-transformation are realisable once the prisoners' dilemma is resolved by measures such as coercion, selective incentives or deliberation.

In Section 2.3, I provided a similar assessment from a constraint-based perspective. On the basis of the (green) inclusiveness benchmark **(BGI)**, I have

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[58] See Chapter 5 for discussion on how we can determine where deliberation should stop in order to avoid the discursive dilemma in the subsequent aggregation.

discussed why eco-filtering is less inclusive than eco-transformation. In addition, drawing on a model of the discursive dilemma in social choice/judgment aggregation theory, I have shown that whether eco-transformation with simple majority rule is procedurally attractive depends on the type of decision agenda in question. This is particularly relevant to collective environmental decision-making, given the varying kinds and levels of pluralism involved.

There are two overall conclusions. First, we are able to obtain green outcomes from a democratic process by eco-filtering or by eco-transformation, depending on the availability of green opinion(s) in the first place. Second, while eco-filtering is less inclusive than eco-transformation, the inclusiveness of the latter depends on the aggregation procedure used and the type of decision agenda concerned. It should be noted that, although I have used simple models from formal political theory, i.e., the prisoners' dilemma and the discursive dilemma, to reach the above conclusions, the emphasis lies not so much in the models per se but their implications for both proposals. In Chapter 5, we shall revisit the discursive dilemma to derive further insights into the design of democratic institutions for environmental decision-making.

CHAPTER 3

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RELAXING CONSENSUS PRESERVATION

In Chapter 2, I have shown that we may escape from the dilemma of green democracy by relaxing the condition of robustness to pluralism. This can be done by restricting the domains of individual opinion either exogenously or endogenously. Exogenous domain restrictions dismiss non-green opinions from consideration, whereas endogenous domain restrictions aim to change opinions from non-green to green (e.g., by deliberation) so that all of them are eventually admissible. As argued, the success of these proposals in avoiding the dilemma of green democracy depends very much on the availability of green opinion(s) in the domain.

One potential problem for both kinds of domain restriction, however, is that, when the profiles of individual opinions are sufficiently diverse or predominantly non-green, a considerable number of these profiles will have to be barred or changed. If the domain restrictions required are perceived as 'too restrictive', then, for exogenous domain restrictions, the democratic process will become too trivial. Likewise, for endogenous domain restrictions by deliberation, it remains uncertain whether green decisions will be available since the actual deliberative outcomes are contingent on the empirical contexts.

Can we get around the above triviality and uncertainty issues by taking an alternative escape route? In this chapter, I consider the second option – relaxing consensus preservation – and offer critical assessments of substantive proposals. To reiterate, consensus preservation demands minimal democratic responsiveness in the sense that a decision alternative should be chosen if all individuals support the same alternative. Relaxing this condition would allow for the case that *even if* there is a profile of unanimous individual choices for a non-green alternative, that non-green alternative is still not chosen as the collective outcome. This can be achieved by either restricting the decision power of individuals, for example by eco-authoritarianism, eco-technocracy or eco-libertarianism, or by restricting permissible decisions, for example by substantive or procedural environmental rights.

In assessing each of these proposals, I shall focus on whether they are normatively desirable as well as practically feasible. I ask, specifically, whether they satisfy certain normative requirements of environmental/democratic decision-making and whether they are applicable in practice as feasible environmental decision-making arrangements. The conclusions are the following: From the angle of participation, eco-authoritarianism, eco-technocracy and eco-libertarianism are less democratic than substantive and procedural environmental rights, whereas from the angle of producing green outcomes, eco-authoritarianism and substantive environmental rights are more appealing. As to whether these proposals are practically feasible, it depends on a number of factors which vary across different empirical circumstances.

My discussion has the following structure. In Section 3.1, I explain the idea of relaxing consensus preservation and how this may be realised. In Section 3.2, I examine, in terms of procedure and outcome, the normative desirability of five different proposals grouped under two categories, namely exogenously restricting individuals' decision power and endogenously restricting permissible collective decisions. In Section 3.3, I suggest a number of factors that we may consider in evaluating the practical applicability of these proposals. Finally, I draw some conclusions in Section 3.4.

3.1 Relaxing consensus preservation: The idea

While it is an empirical fact that pluralism exists at many levels in contemporary liberal contexts, how a decision procedure responds, or should respond, to the diversity of individual opinions in such a way that it is considered democratic is another question. In real-world decision-making, a prominent democratic procedure is simple majority rule, based on the generally accepted principle that the minority is subordinate to the majority. Dahl (2006) observes that, in theory, "[r]unning through the whole history of democratic theories is the identification of 'democracy' with … rule by majorities" (p. 34).

Arguably, simple majority rule is not the only democratic procedure existing in theory or in practice. For example, super-majority support, such as a two-thirds majority, is usually required for amending national constitutions (e.g., in the U.S.) as

well as for dissolving parliaments (e.g., in the U.K.). In some jurisdictions, a unanimous verdict is even necessary in jury trials (e.g., in the U.S. Federal Courts).[59] At the same time, Rousseau (1968) asserts that, although majority rule is sufficient for most collective decisions, there should be unanimous consent, from all members of the state, to the primitive social contract which establishes civil society.

In responding to the diversity of individual opinions, what can we possibly do to modify the above democratic procedures in such a way that any unanimous non-green opinions are overruled in order to circumvent the dilemma of green democracy? To illustrate this question, let us consider again the collective decision-making scenario in Chapter 2, in which the assembly members of 'Enviro Island' are deliberating and deciding on whether or not to ban idling vehicle engines.

The condition of consensus preservation requires that, *if* all individuals unanimously agree on a single alternative, *then* that alternative should be collectively chosen. Suppose, in the 'Enviro Island' scenario, the decision which bans idling vehicle engines is green, whereas the decision which does not ban this is non-green. Imagine all the assembly members, for the sake of, say, preventing any potential industrial actions organised by the professional drivers' associations, choose not to require it to ban idling vehicle engines. Their choices are also backed up by the mainstream public opinion that banning idling vehicle engines would be more of a nuisance to drivers than a benefit to the environment.

If we use a decision procedure which satisfies consensus preservation, it will adopt the unanimous choice of all the assembly members, which is non-green. At the same time, if we also demand that the decision procedure satisfy the condition of robustness to pluralism, it will accept this particular unanimous profile of non-green choices as admissible input. It follows that the decision procedure can generate a collective decision which is non-green, such as in the case above, which is contrary to the condition of green outcomes. This is, once again, the dilemma of green democracy.

How can we escape from the dilemma of green democracy by relaxing consensus preservation? When consensus preservation does not hold, this means that some unanimous choices will be overruled by the decision procedure and hence not adopted as the collective decision. For example, if consensus is no longer preserved,

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[59] United States Courts: http://www.uscourts.gov/FederalCourts/JuryService.aspx (accessed 9 November 2011)

then the unanimous choice of the non-green alternative by the assembly members will have no effect in determining the collective decision. In that case, it is possible that, in the end, a green collective decision is nonetheless produced, which avoids the dilemma of green democracy.

It is clear that no standard democratic procedure can overrule unanimous agreement in the manner described above. Under simple majority rule, if an alternative receives more than 50% support it will become the collective decision. This includes the situation when its support rises to 100%, i.e., all individuals unanimously choose the same alternative. By the same token, any super-majority rule follows the same principle of consensus preservation, except that the threshold of support which an alternative must pass in order to become the collective decision is higher than that of simple majority rule, i.e., more than 50% support is required. As for unanimity rule, it is not only sufficient but also necessary for an alternative to receive 100% support in order to be collectively chosen. Respecting consensus, hence, is a minimal requirement for all these democratic procedures.

For the overruling of unanimity, we need an undemocratic (or less democratic) procedure. Consider sub-majority rule. This demands that collective outcomes follow from the alternative supported by a certain threshold minority instead of that supported by the majority. Let us refer to the 'Enviro Island' scenario again. Suppose there are five assembly members, and the threshold is set at $^1/_4$. If there are respectively two and three individuals choosing the green alternative and the non-green alternative, then the size of the minority ($^2/_5$) is larger than the threshold value, and hence the two individuals can determine what the group chooses, i.e., the green alternative.[60] We can see that by sub-majority rule, the minority may reject the majority choice of the non-green alternative and replace it with the green alternative. However, even this rule respects consensus preservation.

Next, consider dictatorship. This decision procedure demands that collective outcomes follow from the alternative supported by the designated single individual, i.e., the dictator. Suppose Member 1 is assigned to be the dictator. If he/she chooses the green alternative, then, despite the remaining four members choosing the non-green alternative, the green alternative will still be collectively chosen. Conversely, if

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[60] By contrast, if the numbers of individuals choosing the green alternative and the non-green alternative are respectively 1 and 4, then the size of the minority ($^1/_5$) is smaller than the threshold value. Hence, that single individual's choice cannot be decisive for what the group chooses.

he/she chooses the non-green alternative, then, regardless of what the other four members choose, the collective decision will be non-green. We can note that, in the former case, the dictator overrules the majority choice of the non-green alternative and replaces it with the green alternative. However, if every member, including the dictator, chooses the non-green alternative, the collective outcome will be non-green.

Therefore, even though the two decision procedures can overrule majority choices, this does not imply that they can also overrule unanimous choices. On the contrary, both sub-majority rule and dictatorship are totally consistent with consensus preservation. When there is a profile of unanimous choices, there is no distinction between the majority and the minority, so there is no sub-majority choice since the choices of all individuals are the same. Likewise, even for dictatorship, the choice of the dictator is, again, simply that of every individual. The collective decision, even if it follows from the choice of the dictator, it is still equivalent to the choices of the rest of the individuals. Therefore, dictatorship and sub-majority rule, similarly to democratic procedures, do not overrule unanimity.

Given unanimous agreement on the non-green alternative, as in the 'Enviro Island' scenario, there is no way we can overrule this agreement by biasing towards the choice of any single individual or of the minority. Instead, we need a *prescribed* choice of the green alternative which is independent of the choices of any individuals. This can be achieved, as introduced in Chapter 1, through (1) exogenously restricting the decision power of individuals or (2) endogenously restricting permissible collective decisions.

With the first approach, the decision procedure does not, from the outset, process, or respond to, any individual non-green inputs, even if these are admissible according to the condition of robustness to pluralism. In other words, even if there is a profile of unanimous choice of the non-green alternative, the decision procedure does not consider such unanimity in producing the collective outcome. Instead, the prescribed green alternative is imposed exogenously as the collective decision. Such a choice can be placed by an individual or a collective body outside the group of individuals by virtue of his/her/its legal/political power or professional knowledge. For example, the national government of a (unitary) country may, based on positional authority or for epistemic reasons, instruct its regional governments to ban idling vehicle engines, even if the members of the *regional* assembly decide not to do so. This can be achieved through eco-authoritarianism or eco-technocracy.

Alternatively, the first approach can be realised by dismissing collective decision-making altogether. This means that the group of assembly members does not need to make any collective decisions on the idling vehicles issue in the first place. Even if they have already come up with a non-green collective decision, that decision is not binding since it in no sense determines, but merely recommends, what the government should do. In this way, the government may overrule any non-green decision by the group of assembly members and still take action to ask drivers to switch off idling vehicle engines. Here, the final decision outcome is green. This can be achieved through eco-libertarianism.

For the second approach, although the decision procedure transforms individual inputs into collective decisions, it is biased towards the green alternative. In more technical terms, the decision procedure is not neutral when considering the green and non-green alternatives. In other words, the only valid collective decisions are green decisions, and any unanimous non-green choices will be rejected. This can be achieved by building in an internal mechanism which vetoes any non-green consensus. Such mechanisms include, as already introduced, substantive environmental rights and procedural environmental rights.

For example, if there is a constitutional provision which gives citizens substantive rights to a certain standard of environmental quality, the government may need to take action to combat the air pollution caused by the idling vehicle engines. In this way, the decisions which the assembly can arrive at are limited to, possibly, green decisions. Any non-green decisions may also be subject to judicial review and be deemed unconstitutional and invalidated by the judiciary. As grounded in procedural environmental rights, a process for objecting to and reviewing any non-green decisions may be initiated by individuals, such as citizens, who cannot *directly* participate in the decision-making about the idling vehicles issue in the same way as the group of assembly members.

Figure 3.1 summarises the five proposals covered above.
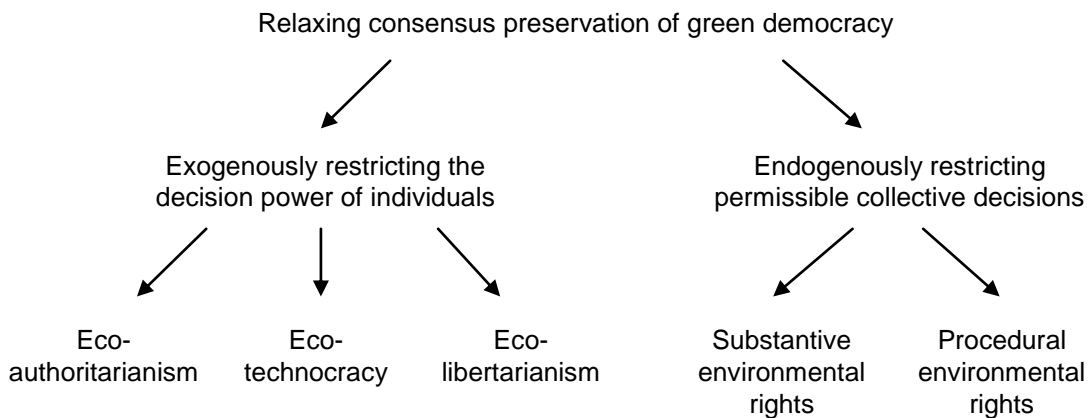
Figure 3.1: Topology of relaxing consensus preservation of green democracy

In sum, we may avoid the dilemma of green democracy by relaxing consensus preservation in such a way that the decision procedure used overrules any unanimous agreement on non-green alternatives. Whilst ordinary democratic procedures, such as simple/super-majority rule and unanimity rule, do not overrule unanimity, neither do some undemocratic procedures, such as dictatorship and sub-majority rule. Instead, we need to rely on exogenously restricting the decision power of individuals (e.g., by eco-authoritarianism, eco-technocracy or eco-libertarianism) or endogenously restricting permissible decisions (e.g., by substantive environmental rights and procedural environmental rights). In the remaining sections of this chapter, I explore the normative desirability as well as the practical applicability of these five substantive proposals.

3.2 The desirability of relaxing consensus preservation: Constraint-based and outcome-based perspectives

To evaluate whether each of the above proposals is normatively desirable, it is essential to set out some fundamental principles or benchmarks. As pointed out in Chapter 2, there are at least two salient perspectives from which we may discuss the normative desirability of an idea, action or institution, namely constraint-based and outcome-based perspectives.

From the outcome-based perspective, to reiterate, the idea, action or institution in question is evaluated on the basis of *what* outcomes it leads to, such as whether green or non-green collective decisions are produced by green democracy. From the constraint-based perspective, such evaluation asks *how* the outcomes come about, based on certain outcome-independent (normative) criteria, such as whether green democracy is inclusive of, and responsive to, the plurality of individual inputs. If it is normatively desirable for a decision procedure to produce green decision outcomes while being inclusive and responsive, then green democracy can be considered normatively desirable in terms of both procedure and outcome.

Nevertheless, as demonstrated in the dilemma of green democracy, there exist limitations on how inclusive and responsive a decision procedure can be in generating the designated green outcomes. More precisely, no decision procedure may simultaneously (1) accept any possible individual inputs; (2) preserve consensus; and (3) always produce green outcomes. For green democracy to be possible, we need to relax at least one of these requirements. The first two requirements are the procedural conditions whilst the third requirement is the outcome condition.

To evaluate the relaxation of a procedural condition from the constraint-based perspective, we keep the other procedural condition constant and compare how far the substantive proposals *depart* from certain normative benchmarks which are outcome-independent. For example, by relaxing consensus preservation, we assume that the decision procedure remains robust to pluralism and examine the relative divergence of its substantive proposals from some normative criterion/criteria of democratic responsiveness. On the other hand, in order to evaluate a procedural condition from the outcome-based perspective, we similarly keep the other procedural condition constant and assess whether its substantive proposals lead to outcomes which satisfy certain normative benchmark(s) for democratic outputs. For instance, we ask whether these proposals will generate green outcomes.

What are the normative benchmarks for democratic responsiveness? Apart from the minimal criterion of consensus preservation, equality is widely considered essential to democracy (e.g., Dahl, 1979; Cohen, 1996; Christiano, 1996b). There are basically two aspects of equality in democratic responsiveness, i.e., (1) equality of decision power between individuals and (2) equality of treatment between decision alternatives. For the former aspect, the decision procedure does not show bias towards any individual(s) by granting them extra or exhaustive power in determining

the decision outcomes. For the latter aspect, the decision procedure does not show bias towards any alternative(s) by granting them extra or exhaustive weighting when they are being considered. We may interpret the relaxation of consensus preservation as the violation of democratic equality in one or both aspects.

We may now specify two normative benchmarks with regard to equality in democratic responsiveness:

(BR1) Equality of individuals' decision power: All individuals are granted equal positive power in determining decision outcomes.[61]

(BR2) Equality of treatment of alternatives: All alternatives are granted equal weighting when under consideration.

In more technical terms, the first benchmark refers to the condition of anonymity, meaning that the decision procedure treats all individuals equally, whereas the second benchmark refers to the condition of neutrality, meaning that the decision procedure treats all alternatives equally.[62] In practice, the two aspects of democratic equality are usually realised as, respectively, the principles of 'one person one vote' and 'one vote one value'. Simple majority rule is regarded as an example of a democratic procedure because it satisfies the conditions of anonymity and neutrality.

In addition, we also need a benchmark for democratic outcomes, which is simply the output condition of green democracy:

(BO) Green outcomes: The decision outcomes are green (prioritising, or are at least consistent with, environmental sustainability).[63]

With the three benchmarks in hand, we shall proceed to discuss how each proposal for relaxing consensus preservation is, if at all, normatively desirable in terms of procedure and outcome.

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[61] This means that, having equal positive power, all individuals are equally decisive.
[62] See List and Dietrich (2010) for more technical discussion.
[63] Note that 'green outcomes' here refers only to the outcomes from the decision-making process, rather than to the outcomes of a particular policy or measure adopted after the decision-making.

The desirability of eco-authoritarianism

As noted, eco-authoritarianism avoids the dilemma of green democracy by imposing a green alternative as decision outcome. In other words, collective decisions depend not on the choices of the individuals in a group but, instead, on the decision alternative as prescribed by an individual or a collective body *outside* the group. As the name implies, such an imposition of green outcomes is coercive regardless of whether the individuals in the group consent to it. This may be realised in absolutist or autocratic regimes where governments possess unlimited power to rule as well as in centralised democratic regimes where political or decision-making power is concentrated at a particular level of government.

While many contemporary regimes are far from absolutist or autocratic, as Heilbroner (1974) and Ophuls (1977) advocate, eco-authoritarianism is still possible when institutions permit the exercise of decision-making power 'from above' within a hierarchy, such as from national to regional governments or from ministerial to bureaucratic governments. Suppose the national government is vested with the power to make final decisions on certain issues, such as environmental issues, *for* the regional government. Then, we can still obtain a green collective decision if the national government chooses to ban idling vehicle engines, even if the group of *regional* assembly members chooses not to do this.

The case outlined above is not purely imaginary. Think of a democratic state which has to fulfil certain responsibilities in order to reduce energy consumption as specified in an international treaty or which has to respond to political pressures from environmental NGOs or from its own nationals to combat all forms of pollution. It makes sense for the national government to introduce a uniform control policy on pollution in order to ensure the effective and consistent resolution of various pollution issues across the country, provided that this is lawful under the constitution.

At the same time, some other environmental issues, such as construction of an international airport and a high-speed railway, may involve the interests of more than one area of the state, affecting various regions as well as the state as a whole. The national government may, on the grounds of securing economic prosperity, centralise the decision-making power on such infrastructure development. All in all, the point is that eco-authoritarianism can be present within even a democratic regime, as long as the national government is willing and able to impose decisions on governments at the regional level under the constitutional framework.

Is eco-authoritarianism attractive from the outcome-based perspective? According to benchmark (BO), a good decision procedure is expected to bring about green decision outcomes. Eco-authoritarianism, by definition, means that there exists a green alternative to be prescribed and imposed by someone who is 'superior' (in the hierarchy) and possesses the final decision-making power. In this way, as long as the decision procedure only responds to that particular green alternative, the decision outcomes must be green.

In the example above, for eco-authoritarianism to be present, the national government may have committed itself to a country-wide air pollution control policy, demanding that all its regional governments decide and act on air pollution matters in line with that policy. Likewise, eco-authoritarianism is also possible in infrastructure development. The national government may value the preservation of natural landscapes more than economic growth, and hence veto any projects, say high-speed railway constructions, which destroy these landscapes.

Notice that benchmark (BO) is met if, and only if, the superior individual or collective body concerned does *in fact* submit green alternatives as decisions. If, for any reason, the superior individual/collective body (e.g., the national government) is reluctant to decide which alternative to support (e.g., unwilling to control air pollution), or is committed to non-green alternatives (e.g., committed to building environmentally-unfriendly infrastructures), then eco-authoritarianism is not present in these cases.

Is eco-authoritarianism desirable in the procedural sense? According to benchmarks (BR1) and (BR2), a democratic procedure should treat all individuals and alternatives equally. It is obvious that eco-authoritarianism violates (BR1), since it grants all the decision-making power to the superior individual/collective body outside the group, whereas the individuals inside the group cannot determine decision outcomes.

Suppose the group of *regional* assembly members continues to choose the non-green alternative of not banning idling vehicle engines. If the national government supports the green alternative, according to eco-authoritarianism, the *regional* assembly has to take the green alternative as the final decision in spite of the unanimous choice of all members in favour of the non-green alternative. It is worth remarking that the eco-authoritarian procedure responds only to the choice of the national government but not to the choices of the *regional* assembly members.

Therefore, the *regional* assembly members are equal only in the sense that they are *equally powerless* in determining the decision outcomes, which remains contrary to (BR1).

The answer to whether eco-authoritarianism violates (BR2) is straightforward. A prerequisite of eco-authoritarianism is that there must be a decision alternative available to be prescribed and imposed by a superior individual/collective body. However, an eco-authoritarian procedure only considers the alternative chosen by the superior individual/collective body if it is green. In other words, if it turns out that the alternative chosen is non-green, then it will not be imposed as the decision outcome.

In other words, if the national government chooses *not* to ban idling vehicle engines, then, in accordance with eco-authoritarianism, this choice will not become a decision outcome which the *regional* assembly should accept and adopt. Therefore, an eco-authoritarian procedure is not neutral when considering green and non-green alternatives, since it imposes only the former, but not the latter, as decision outcomes.

The desirability of eco-technocracy

Similarly to eco-authoritarianism, eco-technocracy avoids the dilemma of green democracy by restricting the decision power of the original group of individuals concerned. Eco-technocracy does not, however, prescribe or impose a green alternative as a decision outcome. Rather, it is biased towards the choices or judgments of certain technocratic individuals or collective bodies, such as élites, experts and professionals. In other words, the decision power is either entirely or partially granted to these individuals or collective parties, leaving the original group of individuals with less, or even no, power in determining the final decision outcomes. Eco-technocracy can be realised by shifting the task of decision-making from citizens to bureaucracies, quasi-autonomous non-governmental organisations (Quangos) or advisory commissions. These institutions are readily available in most contemporary democratic regimes.

Eco-technocracy is often based on the view that the political power to rule and make decisions should be concentrated in the hands of élites/experts/professionals rather than of the ordinary masses. This may be endorsed by Plato's classic assertion that only certain people (i.e., philosopher kings) possess the knowledge and

experience to rule, and that enlightened dictatorship (by philosopher kings) is justified on the grounds of their ability to produce good outcomes (in ruling a state). A similar advocacy of élitism is common in the contemporary context, in which rational rule and scientific management are emphasised. Political/decision power is often in fact, or should ideally be, granted to the enlightened or most privileged individuals or collective parties, such as people with technical/scientific knowledge and/or administrative skills (e.g., experts, professionals and/or bureaucracies) (Burnham, 1941; Weber, 1948). It is also claimed that experts and professionals are more likely to make correct decisions on issues involving a high level of complexity and uncertainty, such as environmental issues (Sunstein, 2002).[64]

In the 'Enviro Island' scenario, suppose an expert panel has been formed which is independent of the executive government and the group of assembly members. A panel like this *may* include environmental scientists, medical professionals and/or other individuals/collective bodies which possess the knowledge and experience to handle issues concerning air pollution/idling vehicle engines. The question of who should be included is, of course, debatable and possibly varies across different types of decision scenarios.[65] But, regardless of the actual composition of the panel, the opinions or choices of the panel members, under eco-technocracy, are given more, or even exclusive, consideration compared with those of the assembly members. In other words, an eco-technocratic procedure responds mainly, or merely, to the opinions or choices of those technocratic individuals/collective bodies.

How desirable is eco-technocracy from the outcome-based perspective? This, similarly, depends on whether an eco-technocratic procedure generates green outcomes (i.e., satisfying benchmark (BO)). It appears that the decision outcomes can be green or non-green, depending on the choices or judgments of the technocratic individuals/collective bodies, and there is no reason why these choices or judgements must always be green. Imagine a situation in which the expert panel judges that, since there is no significant health impact from the present level of vehicle exhaust, it is not necessary to ban idling engines. Meanwhile, an environmental protection agency may, on the basis of a series of environmental impact assessments, conclude that the environmental cost of constructing a new

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[64] See Chapter 6 for further discussion on the epistemic performance of decision-making by technocrats (experts and professionals) and ordinary people.

[65] Such an expert panel may also be substituted by bureaucratic agencies or Quangos as in existing democratic institutions such as pollution control agencies.

international airport can be compensated for by its potential economic benefit; and hence, although the construction project is unfavourable to the environment, the agency may still choose to support it. In neither case do the technocratic individuals/collective bodies choose the green alternative as the final decision.

One factor which affects eco-technocracy in the generation of green decision outcomes is how decisions are made *within* an expert panel. This issue is relevant as long as there is more than one individual/collective body involved. The simplest case is where a unanimous agreement on a green alternative exists among all the members of the panel, and hence the panel will take the green alternative as the final decision. The case becomes more complicated when the members of the panel disagree over which alternative should prevail. In this case, whether a green decision outcome is available depends on how many members of the panel support the green alternative, as well as on how the choices of these members are processed.[66]

In addition, if eco-technocracy is intended only partially, but not entirely, to restrict the decision power of the original group of individuals, then it also matters how much weight is given to the choices of the technocratic individuals/collective bodies in determining the final decisions. Suppose the group of assembly members continues to unanimously choose the non-green alternative, whilst the expert panel comes up with a unanimous agreement on the green alternative. If the choices of the expert panel and the group of assembly members account for, respectively, 60% and 40% of the final decision outcome, then a green outcome will be produced by using simple majority rule. However, if super-majority rule is used instead, then the relative weighting of the choices of the experts must exceed the corresponding sub-majority threshold (e.g., 75%) in order to ensure a green outcome.

In sum, whether eco-technocracy generates green decision outcomes, or satisfies benchmark (BO), depends on whether the choices of the technocratic individuals/collective bodies are green, which in turn depends on (1) how decisions are made *within* the technocratic individuals/collective bodies; and (2) how much weight is given to the choices of the individuals/collective bodies in determining the final decisions.

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[66] For instance, if two out of three members support the green alternative, and simple majority rule is used, the decision outcome will be green. But if, instead, unanimity rule is used, or if two members support the non-green alternative, either there will be no decision outcome or the decision outcome will be non-green.

Next, let us examine whether eco-technocracy is attractive from a procedural perspective. First of all, an eco-technocratic procedure, under most circumstances, does not treat individuals in the original group equally. As in the 'Enviro Island' scenario, if the expert panel withholds all decision power, then the group of assembly members will not be able to determine the final decisions by any means. The assembly members, similarly to what happens under eco-authoritarianism, are left *equally powerless* in decision-making, which is contrary to benchmark (BR1).

On the other hand, if some decision power is transferred to the group of assembly members (e.g., 40%), then the group will be able to affect the final decisions, and each member is equal in determining the group's decision. *In this sense*, benchmark (BR1) is satisfied. However, the members do not share equal decision power with the members of the expert panel when the choices of the latter are given more weight, or when the size of the latter is smaller than that of the former. *If* either of these is the case, *then* benchmark (BR1) is not satisfied.

Does eco-technocracy treat decision alternatives equally, or meet benchmark (BR2)? This depends, again, on how decisions are made *within* the technocratic group of individuals/collective bodies (and, if applicable, *within* the original group of individuals). For the expert panel possessing the decision power exclusively, *if* no particular decision alternative is favoured by the decision mechanism used *within* the panel, *then* benchmark (BR2) is fulfilled. For the group of assembly members sharing part of the decision power, *if* the decision mechanisms used *within* both the group of assembly members and the expert panel do not show bias towards any decision alternative, *then* (BR2) is satisfied.

All in all, whether eco-technocracy is attractive in the procedural sense is highly contingent on how decision power is allocated between/among the technocratic individuals/collective bodies and the original group of individuals, as well as on how the decision mechanism used *within* each group responds to the decision alternatives.

The desirability of eco-libertarianism
The way in which eco-libertarianism avoids the dilemma of green democracy is distinguishable from that of eco-authoritarianism and eco-technocracy. It dismisses the need for collective decision-making altogether by resorting to market

mechanisms. Advocates of eco-libertarianism believe that green outcomes can be better achieved by leaving environmental issues to be decided among individuals themselves, but not at the collective level. This is often based on the neo-liberal view which regards market mechanisms as delivering maximum efficiency (e.g., Hayek, 1948; Friedman, 1962). Eco-libertarianism can be realised in liberal-capitalistic regimes by means, as introduced in Chapter 1, of resource privatisation, government-regulated markets and/or other economic incentives.

Consider again the 'Enviro Island' scenario. Suppose that it is generally not unlawful for individuals to idle vehicle engines. One possible version of eco-libertarianism takes the form of resource privatisation by assigning individual property rights. Imagine that the roads and streets do not initially belong to anybody. Any individuals such as drivers are free to pollute by idling the engines of their vehicles. Now, suppose property rights within a certain area of roads and streets are assigned to a taxi operator. This area also covers some residential and commercial buildings that may be affected by any vehicle exhaust from idling engines.

In this case, the persons affected and/or the government may negotiate directly with the taxi operator if the latter allows its drivers to idle engines on the roads and streets it owns. This may involve 'paying off' the taxi operator, e.g., with money, for asking its drivers to switch off idling engines. The exact nature and size of the pay-off is determined through bargaining between both parties. If, eventually, they reach an agreement whereby the idling engines are switched off in return for a certain pay-off, then a green outcome will be achieved without going through the process of collective decision-making.

The above version of eco-libertarianism is grounded on the celebrated Coase theorem (Coase, 1960). One interpretation of the theorem is that, if there are no transaction costs, the assignment of individual property rights leads to bargaining between parties which produces an efficient outcome. For instance, if no cost (e.g., time cost) is involved for the residents/government and the taxi operator to bargain with each other, or to establish contracts upon reaching agreement, then, according to the Coase theorem, both parties will pursue bargaining in order to reach an efficient, or Pareto-optimal, outcome. This outcome represents a situation in which neither party can become better off without making the other party worse off.

Apart from by resource privatisation, eco-libertarianism can also be realised in government-regulated markets. One possible approach is to adopt economic

incentives to induce individuals to be green (e.g., adopting green opinions) such that green outcomes will emerge. On the one hand, the government may auction off tradable permits which grant rights to pollute up to a certain level within a designated area. For instance, the government may define the maximum level of air pollution in a certain area of roads and streets, and sell a pollution permit to any individual/collective body which is willing and able to bid for it. The permit is transferable thereafter through market exchange, and it is lawful to idle vehicle engines only if in possession of the permit. If any driver wishes to idle his/her vehicle engine, he/she has to bid for the pollution permit. Likewise, if any residents wish the idling engines to be switched off, they may also purchase the permit and then choose not to use it.

On the other hand, the government may introduce pollution taxes which leave individuals with the freedom to determine whether, as well as how much, to pollute. For example, the government charges a premium, by the concentration of pollutants from vehicle exhaust, for idling vehicle engines. It is lawful to idle vehicle engines only if such a premium is paid. If any driver wishes to idle his/her vehicle engine, he/she must pay this pollution tax.

Is eco-libertarianism attractive from the outcome-based perspective? Consider the assignment of individual property rights. It is evident that the (decision) outcomes from bargaining at the individual level are not always green. Suppose, conversely, that property rights in a certain area of roads and streets are assigned to some person(s) affected or to the government. In this case, if a taxi operator desires its driver to enjoy air-conditioning while waiting for customers, it may be incentivised to pay the affected person(s)/government compensation in return for being allowed to idle the engines of its vehicles. If the latter party accepts any such offer, the idling vehicles issue will probably remain. This (decision) outcome from bargaining is non-green, and *in this context*, benchmark (BO) is violated.

Of course, the affected person(s)/government may choose not to cooperate with the taxi operator in the first place. However, if they fail to reach any agreement from bargaining, they may need to resort to other mechanisms, such as mediation or the filing of a lawsuit. The outcomes from these alternative mechanisms may not be green either. For example, it is entirely possible that, when the case is taken to court, the taxi operator will be found innocent as not having violated any property rights by

letting its drivers idle their engines. *If* this is the case, *then* the (decision) outcome is not green, and this is contrary to benchmark (BO).

Another possibility would be that both parties are able to reach an agreement, but the (decision) outcome is still non-green or only partially green. Suppose the property rights in an area of roads and streets are, as above, owned by the affected person(s)/government. While the taxi operator may be willing and able to compromise, it may make a counterproposal to limit the number of months and hours that drivers may idle their engines (e.g., only during daytime in summer). The affected person(s)/government may find the 'compromise proposal' acceptable, although less preferable. If this is the result of the bargaining, the taxi operator is, strictly speaking, still polluting, which may be perceived as a partially green or even a non-green outcome. *If* so, *then* benchmark (BO) is not satisfied either.

Similarly, green outcomes are in no sense guaranteed by using economic incentives. As discussed in Chapter 2, whether the individuals will be induced to be green depends crucially on how they respond to the incentives. It is possible that the taxi operator may no longer allow its drivers to idle their engines upon realising that the cost of purchasing the pollution permit or paying the pollution tax is higher than the benefit of idling vehicle engines. However, if the owner is still willing and able to buy the permit or pay the premium in order to pollute, the idling vehicles issue will probably remain. *In the latter case*, the (decision) outcome is non-green, which does not fulfil benchmark (BO).

In sum, under eco-libertarianism, whether the (decision) outcomes are green depends on the results of interactions in the market. With resource privatisation, both parties may or may not reach an agreement through bargaining, and if they do not, green outcomes will be contingent on the outcomes of some alternative resolution mechanisms. If, on the other hand, the parties are able to reach an agreement, green outcomes will still be contingent on what they have agreed on, which may be green, partially green or non-green. With other economic incentives, green outcomes are obtainable only if the polluting individuals/collective bodies are no longer willing or able to purchase pollution permits and/or pay pollution taxes.

As to whether eco-libertarianism is attractive in a procedural sense, the answer varies with different versions. With resource privatisation, it merely involves a limited number of parties, namely the holder(s) and the violator(s) of the property rights concerned, and excludes the participation of other parties. For example,

suppose that property rights of roads and streets belong to the government, and the government deals directly with the taxi operator or drivers. Then, even if there are residents or pedestrians affected by the idling vehicle engines, they may have no power to influence the bargaining outcomes. This violates benchmark (BR1).

On the other hand, with government-regulated markets, individuals/collective bodies with more financial resources are more able to influence the outcomes than those who have fewer. With tradable pollution permits, individuals/collective bodies with more money are more likely to purchase the permits and decide thereafter whether or not to pollute. With pollution taxes, likewise, those with greater financial resources are more able to afford the premium, and hence have more power in determining whether or not the (decision) outcome is green. Here, benchmark (BR1) is not satisfied either.

What about benchmark (BR2)? With resource privatisation, this does not necessarily favour any particular alternative, since the (decision) outcomes are contingent on the bargaining outcomes. The bargaining process itself does not in any sense imply that the (decision) outcomes must always be green, partially green or non-green. Hence, benchmark (BR2) is satisfied. However, with government-regulated markets, any economic incentives adopted are intended to induce green choices and behaviour by increasing the cost of non-green choices/behaviour. In other words, individuals/collective bodies will find it more costly to be non-green than green. Therefore, these incentives, intentionally, do not treat green and non-green alternatives equally, which is contrary to benchmark (BR2).

The desirability of substantive environmental rights
The first three proposals for relaxing consensus preservation bring about green outcomes by exogenously restricting the decision power of the original group of individuals. The remaining two proposals, in contrast, take a different approach by endogenously restricting permissible decisions. This means that the choices of any individuals are not dismissed from the decision procedure in the first place, but certain unanimous agreements at the collective level may be struck down in the end.

As introduced in Chapter 1, one possibility in this context is to establish substantive environmental rights. This is usually based on the view that all humans are entitled to certain environmental conditions which are fundamental to their well-

being and should not be seized (e.g., Hayward, 2005). More broadly, these fundamental and inalienable rights, or natural rights, should be protected against any possibility of being compromised or sacrificed in the face of a democratic majority. In contemporary liberal democracies, substantive environmental rights can be established by building these into national constitutions, so that any unanimous agreement which violates such constitutional provisions will be overruled by judicial review.

Substantive environmental rights refer to the *substantive* elements protected by the corresponding constitutional provisions. From one perspective, environmental rights may outlaw actions or arrangements which threaten the *survival* of certain individuals, such as depriving them of the supply of safe food, clean water and/or fresh air. From another perspective, these rights may go further to rule out any actions or arrangements which are contrary to the *well-being* of individuals, such as pollution or failure to preserve ecological diversity. Depending on the circumstances in different jurisdictions, the list of substantive elements covered by environmental rights varies. Moreover, these substantive rights may be stipulated in constitutions as general principles or in more specific terms.

Can substantive environmental rights ensure that decision outcomes are always green, as stipulated by benchmark (BO)? To achieve green outcomes, substantive environmental rights, as constitutional provisions, need to provide a clear indication that the green alternative, instead of the non-green alternative, should be adopted across different environmental decision issues. This will depend on what substantive elements are recognised as environmental rights in the first instance.

If substantive environmental rights are interpreted minimally as only the forbidding of actions or arrangements which deprive people of the basic necessities for survival, then we cannot reasonably expect the corresponding constitutional provisions to rule out any unanimous non-green agreement which is irrelevant to such deprivation. In the 'Enviro Island' scenario, even if the assembly members unanimously agree not to ban idling vehicle engines, this agreement, arguably, does not threaten the *survival* of the residents and pedestrians at the basic level. According to this minimal interpretation of substantive environmental rights, therefore, not all unanimous non-green agreements will be overruled and substituted by green alternatives. In other words, substantive environmental rights can co-exist with a non-green consensus, and hence the former cannot guarantee green outcomes.

On the other hand, substantive environmental rights may also be interpreted in a thicker sense as forbidding actions or arrangements which threaten both human survival and human well-being. In this case, any unanimous non-green agreement which contributes to such threat will be ruled out by the corresponding constitutional provisions. This may expand the scope of restriction of non-green outcomes. However, whether such a thicker notion of substantive environmental rights will always produce green outcomes still depends on how 'well-being' is understood. Imagine that, in a judicial review, the court reaches the following verdict:

> Although idling vehicle engines create nuisance for the nearby residents and pedestrians, there is no sufficient scientific/medical evidence that the vehicle exhaust from idling engines brings about significant health impact on people. On this ground, the taxi operator, for example, has not infringed the well-being of the residents and pedestrians, and hence it may lawfully allow its drivers to idle their engines.

This verdict makes sense insofar as the presence of 'significant health impact', as proven by 'sufficient scientific/medical evidence', is necessary for any infringement of people's well-being. *If* we regard this verdict as possible in a judicial review, *then* substantive environmental rights may not always overturn a non-green consensus and generate green decision outcomes, and *in this case*, benchmark (BO) is not satisfied.

From the procedural perspective, it is apparent that, by definition, substantive environmental rights, regardless of how thin or thick this notion is, overrule certain unanimous non-green agreements. Therefore, they are not neutral when considering all alternatives, which violates benchmark (BR2). However, this may not always be the case. As discussed, since, depending on the coverage of these rights, some non-green consensuses may not be overruled, it is possible for substantive environmental rights to be neutral in the context of green and non-green alternatives. If substantive environmental rights only rule out a unanimous agreement which threatens people's survival, then such rights do not dismiss any unanimous agreement which, albeit non-green, does not threaten people's survival. Hence, substantive environmental rights *can* be neutral in the context of green and non-green alternatives, given that the non-green alternative is not dismissed from the outset.

As to whether substantive environmental rights treat all individuals equally, or satisfy benchmark (BR1), this depends on the decision procedure into which these

rights are incorporated. In principle, only unanimous agreements at the collective level, not individual choices, may be overruled by these rights. Strictly speaking, the notion of substantive rights does not stipulate whose choices should be given more weight or whether all should have the same weight. This is, instead, stipulated by the decision procedure used.

For example, simple majority rule assigns equal weight to all individual choices, and the same is true of other democratic procedures such as super-majority rule and unanimity rule. *If* substantive environmental rights are incorporated into any of these procedures, *then* all individuals are treated equally according to benchmark (BR1). If, on the other hand, dictatorship or oligarchic rule is used instead, then the choices of a single individual (i.e., the dictator) or of a small group of individuals (i.e., the oligarchy) are considered exclusively or given more weight in consideration. [67] As long as these choices are not ruled out by substantive environmental rights, they will determine decision outcomes. *In the latter case*, the decision power of individuals is in no sense equal, which violates benchmark (BR1).

The desirability of procedural environmental rights

Similarly to substantive environmental rights, procedural environmental rights strike down any unanimous agreement which violates the elements as protected by the corresponding constitutional provisions. They differ, however, in the way that procedural environmental rights focus, instead of on substantive environmental issues, on the participation of people in making collective environmental decisions. In other words, procedural environmental rights restrict the permissible decisions about *how* environmental decisions should be made rather than whether these decisions should be green or non-green. For example, any unanimous agreements on forbidding people's participation in environmental decision-making will be overruled. Such rights of participation are often based on the view that 'what touches all should be decided by all'[68] and environmental issues affect the interests of all humans (and even future humans and non-human entities).

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[67] Recall that both dictatorship and oligarchic rule satisfy the condition of consensus preservation.

[68] Justinian, *Codex*, 5.59.5.2. The original sentence is in Latin, i.e., *quod omnes similiter tangit ab omnibus comprobetur*. Cited by Ball (2006), pp. 136-137. See also List and Koenig-Archibugi (2010), footnote 12.

Having said this, procedural environmental rights are also relevant to producing green decision outcomes. This is because these procedural rights offer people an opportunity to influence decision outcomes by either participating directly in the decision-making process or striking down any unanimous non-green agreement by other individuals. For instance, even if the assembly members arrive at a non-green consensus which does not ban idling vehicle engines, other citizens such as the nearby residents and pedestrians affected, once granted certain procedural environmental rights, may attempt to strike down such a consensus. This can be done by the following routes: (1) Adopting another decision procedure which includes the affected citizens; or (2) filing a judicial review against the non-green consensus of the assembly members. For route (2) to be possible, some relevant constitutional provisions based on substantive environmental rights are also required.

How attractive are procedural environmental rights? From an outcome-based perspective, benchmark (BO) is not always satisfied since they do not appear to guarantee green collective outcomes. With route (1), the right to participate in decision-making does not imply a right to *impose* an alternative decision outcome. After all, whether an alternative can become the decision outcome depends crucially on how many individuals support that alternative and how these 'supportive' votes are counted by the decision procedure. For instance, while some affected citizens may hope for a green outcome from another decision-making process, it is entirely possible that, eventually, they will still arrive at a non-green outcome which is equivalent to the earlier unanimous agreement of the assembly members. This can be the case when, for example, the majority of affected citizens support the non-green alternative. As for route (2), green outcomes are also not guaranteed by a process of judicial review based on substantive environmental rights, following the same argument as in the previous subsection.

From the procedural perspective, whether procedural environmental rights treat all alternatives equally, as stipulated by benchmark (BR2) depends on the decision alternatives in question. *If* there is/are certain decision alternative(s) on the agenda which infringe(s) people's right to participate in environmental decision-making, *then* such alternative(s) will be dismissed by procedural environmental rights, and hence not all alternatives will be given equal weight when under consideration. *In this case*, benchmark (BR2) is not satisfied. If, on the other hand, no decision alternatives on the agenda imply such an infringement of participatory rights, as in

the case of the green and non-green alternatives in the 'Enviro Island' scenario, then procedural environmental rights per se are not biased towards any particular alternatives. In this case, whether benchmark (BR2) is satisfied depends on whether the decision procedure used treats all alternatives equally (e.g., simple majority rule).

As to whether procedural environmental rights, as stipulated by benchmark (BR1), treat all individuals equally, the answer for route (2) is positive since all individuals possess an equal right to review any unanimous non-green agreements. For example, if route (2) is adopted, procedural environmental rights will equally entitle all affected citizens to file a judicial review against any non-green consensus reached by the assembly members. On the other hand, the answer for route (1) depends, again, on the decision procedure used. Even if all individuals are entitled to participate in decision-making, this does not imply that all their choices are considered equally. Imagine that all affected citizens decide on the idling vehicles issue by a separate referendum, but one of these citizens is chosen as the dictator, and dictatorship is adopted as the decision procedure. In this way, *if* a dictatorial procedure is used, *then* procedural environmental rights will not satisfy benchmark (BR1). Nevertheless, this result *can be reversed* if the decision procedure used grants equal power to all individuals, as with simple majority rule.

Summary

So far, I have considered the five substantive proposals for relaxing consensus preservation. These proposals can be used to overrule any unanimous agreement on alternatives which are inconsistent with the condition of green outcomes. They either exogenously restrict the decision power of individuals or endogenously restrict permissible decisions. I have evaluated the normative desirability of each proposal based on three benchmarks which are necessary for green democracy, namely the procedural conditions of equality of individuals' decision power (BR1) and equality of treatment of alternatives (BR2), as well as the output condition of green outcomes (BO). Strictly speaking, in order to determine whether each proposal can satisfy these benchmarks, we need to consider together some other factors of dependence.

A more general picture is that, by adopting eco-authoritarianism, eco-technocracy or eco-libertarianism, benchmark (BR1) cannot be satisfied in any case, whereas by adopting substantive/procedural environmental rights, benchmark (BR1)

may still be satisfied, depending on the decision procedure used. From the angle of participation, restricting permissible decisions is more democratic than restricting the decision power of individuals. On the other hand, from the angle of generating green outcomes, eco-authoritarianism and substantive environmental rights are more attractive, since they can satisfy benchmark (BO) if there is a green alternative to be prescribed and imposed as decision outcome (with eco-authoritarianism) or *all* possible decision alternatives that are (potentially) non-green are ruled out by the corresponding constitutional provisions (with substantive environmental rights).

3.3 The practical applicability of relaxing consensus preservation

From a purely theoretical perspective, all the above proposals are logically possible since having relaxed consensus preservation, they are consistent with the remaining two conditions for green democracy, i.e., robustness to pluralism and green outcomes. Nevertheless, not all proposals which are workable or appealing *in theory* are equally attractive or even feasible *in practice*. In this section, I briefly discuss the practical applicability of these proposals. I identify a number of factors which affect whether, and if so how, each proposal may be realised in real-world collective environmental decision-making.

Following Bardach (2009), I specify three criteria which are commonly used to evaluate the practicability of proposals for public policy and political arrangements:

(C1) Legality: The proposal operates in accordance with constitutional and statutory laws.

(C2) Political acceptability: The proposal receives wide and intense support, but meets with narrow and mild opposition (if any).

(C3) Implementability: The proposal can be implemented with minimal administrative cost and few adverse side-effects.

Criterion (C1) is the most fundamental, in the sense that no political arrangements (or more specifically, decision arrangements) may violate constitutional or statutory laws. Otherwise, either these arrangements cannot be realised in the first place or the legal validity of decision outcomes from these arrangements is likely to be

challenged. Criterion (C2), similarly, is essential to any feasible decision arrangements. After all, if people do not support or even oppose these arrangements, it is likely that they also will not accept the corresponding decision outcomes as legitimate, which in turn threatens the stability of the arrangements themselves.

At the same time, criterion (C3) concerns ease of implementation, which also determines the practicability of decision arrangements. Consider a decision arrangement that may be too costly to operate (e.g., a referendum for *every* single decision issue), or that, once operated, has immense undesirable side-effects (e.g., widespread corrupt and illegal conduct of elections). In either case, it is unlikely that the arrangement will be widely supported by politicians or by people in general.

Below I discuss how each of these criteria illuminates conditions that affect the practical applicability of the five substantive proposals for relaxing consensus preservation.

Legality

A feasible decision arrangement must be, first of all, legal. A minimal constraint of legality is that the decision arrangement must not, in principle, violate the constitutional and statutory laws of a particular jurisdiction. A more demanding constraint may require certain constitutional or statutory laws which grant authority to individuals/collective bodies to administer and operate the decision arrangement. The first constraint ensures that the decision arrangement is legally valid, while the second constraint ensures that the decision arrangement can be realised substantively.

Consider the two proposals for restricting permissible decisions. Presumably, if substantive/procedural environmental rights are stipulated as constitutional provisions, these provisions will not contradict other constitutional or statutory laws (or even if they contradict the statutory laws, the former will still prevail). This satisfies the first constraint. If, on the other hand, substantive/procedural environmental rights are merely alleged to be a kind of natural or human right *without* being recognised as legal prescriptions, there is still a chance that these rights may be incompatible with the existing constitutional or statutory laws. If this is the case, the first constraint may not be satisfied.

As for realising substantive/procedural environmental rights, it is crucial that there exists a mechanism/institution which can overrule any decision outcomes that

breach these environmental rights. The process of judicial review by the judiciary appears to be an example of such a mechanism/institution. In most contemporary liberal democracies, the power of the judiciary to strike down unconstitutional political actions or arrangements (e.g., decision outcomes) is built on the principle of judicial independence. Judicial independence means that the judicial branch of government is strictly separated from the other branches, and the judicial decision-making process is not subject to any influence from these other branches of government. Therefore, in order for environmental rights to be exercised through judicial review, it is necessary for the constitution to grant the judiciary the corresponding power and recognise the principle of judicial independence. This constitutes a necessary condition for satisfying the second constraint.

Next, consider the first two proposals for restricting the decision power of individuals, i.e., eco-authoritarianism and eco-technocracy. Eco-authoritarianism prescribes and imposes green alternatives as decision outcomes, and one prerequisite is that there must be at least an individual/collective body to carry out such a task. In an autocratic regime this may be done by a dictator; and in a centralised democratic regime the national government may be responsible. In regimes where constitutionalism is observed, it is necessary that there exist relevant constitutional/statutory laws specifying how, where and to what extent the dictators or national governments may exercise the authority to prescribe and impose green decision outcomes. This is in order to fulfil the second constraint. More fundamentally, there must be no constitutional/statutory laws which forbid the rejection of any consensus reached in earlier decision-making processes. This is in order to satisfy the first constraint.

Eco-technocracy concentrates decision power over environmental issues (entirely) on certain technocratic individuals and/or collective bodies, such as elites, experts or professionals. As an eco-technocratic procedure is biased towards the choices of these technocratic parties, similarly, in order for the first constraint to be satisfied, there must not be any legal provisions which prohibit the overruling of any earlier unanimous agreement reached. In addition, in order to satisfy the second constraint, there must also be relevant laws which grant these technocratic individuals and/or collective bodies more, or even exhaustive, power in a separate decision-making process.

Finally, with eco-libertarianism, since this leaves environmental decision-making to individuals in the market, the constitution, in the first place, has to stipulate that the regime in question will operate an economic system which does not preclude free commercial exchange of environmental goods, which by and large will mean a capitalistic system. This is in order to satisfy the first constraint. Furthermore, for privatisation of resources to take place, there must be statutory laws which specify how individual property rights are to be acquired, transferred and enforced. This makes possible the assignment of clear property rights, which is a precondition of the Coase theorem which justifies eco-libertarianism (as mentioned above). With government-regulated markets and economic incentives, there must be laws and regulations underpinning the corresponding measures, such as relevant traffic regulations to back up congestion charging. This is in order to satisfy the second constraint.

Note that the legality criterion is not restricted to constitutional and statutory laws in political regimes. Arguably, collective decision-making (on environmental issues) may also take place within private groups or organisations. For example, there are usually constitutions in registered companies, non-profit-making organisations and even in some smaller organisations in civil society. In addition, there are often boards of directors/governors/trustees that oversee activities in these groups/organisations. Subject to a similar legality constraint, it is also possible to adopt any of the five proposals *within* these groups/organisations. For example, the boards of directors/governors/trustees may, for the protection of substantive/procedural environmental rights, act like a judiciary and review any unanimous agreement which is contrary to those rights. These boards may also prescribe and impose green decision outcomes (as in eco-authoritarianism), concentrate decision power in the hands of a separate group of experts (as in eco-technocracy), or leave it up to the members of the group/organisation to make decisions at individual level (as in eco-libertarianism). All these actions are, however, conditional on compliance with what is stipulated in the constitutions.

Political acceptability

On top of legality, a feasible decision arrangement must also be politically acceptable. Very often, it is even a pre-requisite that any proposal for political arrangements or

public policy must secure sufficient support from legislators, political parties, interest groups and the general public before it can be passed as law. In other words, satisfying the political acceptability criterion is often necessary in order to satisfy the legality criterion. Even if an unwelcome proposal already exists as law, there may be immense political resistance, say from civil society, which hampers its implementation or even reduces the overall popularity of a government.

Political acceptability can be measured by two indicators: first, the scope and intensity of political support, and, second, the scope and intensity of political opposition.[69] One understanding of 'scope' is the number of political actors (such as political parties, interest groups and citizens), while 'intensity' may refer to the level of support exhibited in the attitudes and behaviour of these political actors. Under most circumstances, the wider and more intense the support, the more politically acceptable the proposal. On the other hand, the narrower and milder the opposition, the more politically acceptable the proposal. As a general principle, therefore, a politically feasible decision arrangement must receive wide and intense political support as well as meeting narrow and mild political opposition.

Consider the three proposals for restricting the decision power of individuals. If the original group of individuals is no longer able to determine decision outcomes, these individuals may constitute one major source of opposition. If this original group is relatively small in size, such as the assembly members in the 'Enviro Island' scenario, we can expect the opposition to be relatively narrow. But if the original group is as large as all the citizens of the city-state, the opposition will probably be wider. At the same time, if the original group is cohesive, its members may share a more or less similar attitude of opposition to any proposals which reduce their decision power. We may, then, expect the opposition to be more intense. In contrast, if the group is more loosely connected, then the intensity of opposition may be less. Therefore, in order to minimise the degree of opposition, one possibility is to limit the application of the three proposals to smaller and/or less cohesive groups.

We may also devise strategies to boost political support for the three proposals. The possible sources of support vary between different proposals. With eco-authoritarianism, this may be applied to dictators (in autocratic regimes) or national governments (in centralised democratic regimes) whose decisions are welcomed by

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[69] See also Bardach (2009), p. 34. Note that Bardach sees the two indicators as necessary conditions, rather than measurement standards, for political acceptability.

individuals. These may be heads of governments with sufficiently high popularity, leaders with outstanding charisma or dictators with authority based on tradition.[70] When the task of prescribing and imposing green decisions is performed by these well-received individuals/collective bodies, it is more likely that individuals will accept the eco-authoritarian procedure because of their affinity with these individuals/collective bodies.

With eco-technocracy, likewise, we can increase the chances of acceptance by applying this to technocratic individuals and/or collective bodies with sufficiently high credibility. This means that they are trusted by virtue of their competence (e.g., professional knowledge and experience) to make environmental decisions *on behalf of* others. An expert panel with members from highly-educated and/or well-respected backgrounds is an example. These individuals/collective bodies may also need to ensure transparency in their decision-making process and to back up their decisions with concrete evidence and sound arguments. In this case, individuals may become more convinced about the credibility of an eco-technocratic procedure as a whole.[71]

With eco-libertarianism, a major source of support originates not from any popular or credible individuals or collective bodies, but from a discourse maintaining that environmental issues are better handled at individual level (i.e., in the market). There is a higher chance of such a discourse existing in regimes with a *laissez-faire* capitalist economy and groups/organisations with *laissez-faire* style of leadership. If these regimes or groups/organisations are stable, presumably their citizens or members will accept, at least tacitly, such a principle that the government or collective should not interfere with their affairs unless these cannot be dealt with by the individuals themselves. If people in these regimes or groups/organisations understand that environmental issues can be sorted out simply through market mechanisms, there is a good chance that they will not see making collective decisions on these issues as always necessary. This idea is sometimes described as the subsidiarity principle (e.g., Gosepath, 2005).

Next, consider the remaining two proposals which restrict permissible decisions. Since substantive/procedural environmental rights preclude certain

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[70] See also Weber's (1948) distinction between three types of authority (or legitimate exercise of power), i.e., traditional, charismatic and legal-rational authority.
[71] Of course, this also depends crucially on whether they value the credibility of decision outcomes from these, despite credible technocratic parties. For an alternative collaborative model engaging both 'experts' and 'ordinary people', see our discussion in Chapter 6.

alternatives from becoming decision outcomes, a major source of opposition may originate from individuals and/or collective bodies that support these 'forbidden' alternatives. Possibly, in the case of most non-green alternatives ruled out by substantive environmental rights, some individuals/collective bodies may have interests in these. For example, the conservation view of environmental protection is often in conflict with economic development, and parties who have business interests in such development may resist the idea of making non-green collective decisions unconstitutional in all circumstances.

With procedural environmental rights, a similar resistance may come from individuals/collective bodies with power to influence government decisions, such as through lobbying. These privileged parties may not welcome the idea of widened democratic participation, as ensured by procedural environmental rights, since this reduces their original power of (environmental) decision-making. To minimise oppositions, therefore, we may limit the applications of substantive/procedural environmental rights to contexts where individuals/collective bodies, at least in general, value both economic development *and* environmental protection/ sustainability, and where government is not biased towards the interests of certain individuals/collective bodies in making collective decisions.

On the other hand, to increase the chances of political support for substantive/procedural environmental rights, we may focus on contexts in which the values of rights, as well as of democracy and/or environmental sustainability, are widely observed and accepted. Generally speaking, the first two values can readily be revealed in many contemporary liberal-democratic regimes/societies. For regimes/societies which are less shaped by liberal individualism, but rather, say, by Asian or Confucian values of social harmony and respect for authority, as in the Oriental world, it is less likely that notions of right and democracy are as welcome. With environmental sustainability, this value is more likely to exist in regimes/societies where there are mature green political parties, environmental NGOs and/or robust social norms which incentivise environmentally responsible attitudes and behaviour. Broadly speaking, these are more common within developed than developing countries. In order, then, to maximise political support for substantive/procedural environmental rights, it is preferable to restrict their application to liberal-democratic and developed regimes/societies.

Implementability

Finally, a feasible decision arrangement must be implementable. There are a variety of standards which determine whether a proposal for political arrangements or public policy is implementable, but two of these are, arguably, particularly important. The first standard concerns the administrative cost involved. It is sensible to assume that the lower the cost, the more implementable the proposal. The second standard concerns the possible negative side-effects which may come with the intended positive outcomes of the proposal. It makes sense, again, to postulate that the fewer or less serious the negative side-effects, the more implementable the proposal. Let me suggest some very preliminary observations on this.

Consider the first two proposals for restricting individuals' decision power. With eco-authoritarianism, green collective decisions are readily available as long as there is an individual/collective body which prescribes and imposes green alternatives as decision outcomes. If this is carried out by a single individual, e.g., a dictator, then what is required is usually only endorsement by that individual, and hence the administrative cost is relatively trivial. If, on the other hand, this is realised by a collective body, such as a national government, there may be administrative costs involved for bureaucratic procedures and internal co-ordination, notably meetings and paperwork. At the same time, with eco-technocracy, a similar kind of administrative cost is unavoidable for co-ordination purposes within technocratic groups/organisations, such as expert panels. Furthermore, there may be an additional cost for appointing experts, professionals and administrative staff.

A notably undesirable side-effect of eco-authoritarianism is the possibility of abuse and corruption. Since there is an individual/collective body with complete power over what alternatives to prescribe and impose as collective decisions, there is a risk that that individual/collective body will accept benefits from, and biases towards, the interests of certain parties who prefer non-green outcomes and will, as a result, prescribe and impose non-green alternatives as decision outcomes. This is likely to invite criticism of the soundness of the procedure as well as the outcomes. With eco-technocracy, similarly, it is possible that people will challenge the soundness of the choices made by 'technocrats', especially if they decide without substantive evidence and convincing arguments. A more complicated issue is that even these experts and professionals may remain deeply divided among themselves and may not be able to reach any decisions at all.

As for eco-libertarianism, since environmental decision-making is here left to individuals in the market, there is no administrative cost involved as in other *collective* decision-making scenarios such as voting, co-ordination and/or certain personnel appointments. However, spending is still necessary in order to maintain the existing framework for free market exchanges. For example, with resource privatisation, it must be ensured, at least, that the institution which assigns and enforces individual property rights works properly across time. As for government-regulated markets and economic incentives, further administrative costs appear to be expected for the devising and realisation of the corresponding regulatory/incentive measures.

One major side-effect of eco-libertarianism is the possible negative externality resulting from non-green individual choices. As discussed, under resource privatisation, holders of property rights are free to choose non-green alternatives as long as they are willing and able to bear the corresponding costs. Likewise, even if economic incentives are in place, people may still not be motivated to choose green alternatives, especially when these incentives are perceived as trivial. In such a case, we may arrive at a situation where, in the absence of any collective decision-making arrangement, some people have to bear the cost of the persisting environmental problems whilst remaining powerless to resolve these problems.

Finally, consider the remaining proposals for substantive/procedural environmental rights. One obvious administrative cost is that of turning these rights into constitutional provisions, which includes all the resources spent on the corresponding legislative process. Further administrative expenditure goes on the institution, e.g., the judiciary, which is responsible for enforcing these rights so that any unconstitutional consensus/collective decisions are struck down in, say, the process of judiciary review. Realising procedural environmental rights also implies a possible cost for devising and maintaining channels to enable more democratic participation in environmental decision-making.

A major negative side-effect of substantive/procedural environmental rights concerns their inflexibility. These rights, once constitutionalised, impose inviolable constraints on the outcomes (and even the procedures) in all environmental decision scenarios. While such inviolable constraints can ensure a certain standard of environmental quality and/or democratic participation, as time passes, circumstances will change and these constraints may no longer be responsive to new issues and

concerns. One example is when people's perception of well-being, as protected by current environmental rights, alters. In this case, it becomes necessary to amend or supersede these 'out-dated' provisions, but, given the rather inflexible nature of constitutional laws, it is unclear how likely it is that the task can be completed, if at all, within a reasonable time-frame.

3.4   Conclusion

In this chapter, I have considered the second escape route from the dilemma of green democracy, i.e., relaxing consensus preservation. In Section 3.1, I briefly illustrated, in more general terms, how unanimous agreements may be overruled through five substantive proposals, i.e., eco-authoritarianism, eco-technocracy, eco-libertarianism, substantive environmental rights as well as procedural environmental rights.

My core discussion was presented in Section 3.2. Based on the three normative benchmarks of green democracy, I have examined the desirability of the five substantive proposals from both constraint-based and outcome-based perspectives. The general conclusion is as follows: *from the angle of participation*, eco-authoritarianism, eco-technocracy and eco-libertarianism, which restrict the decision power of individuals, are less democratic than substantive/procedural environmental rights, which restrict permissible decisions. By contrast, *from the angle of producing green outcomes*, eco-authoritarianism and substantive environmental rights are relatively more attractive.

In addition, I have asked in Section 3.3 whether these five proposals are practically feasible. Based on three practicability criteria, I have outlined how we may approach this question by considering their legality, political acceptability and implementability. My finding is that whether these proposals are workable in practice depends on a number of factors which vary across different empirical circumstances. It should be borne in mind, however, that the issue of practical applicability is very complex and context-dependent, and my observations are in no sense intended to be exhaustive or definitive. I hope, instead, to offer a starting point for systematically exploring how we may realise these proposals, which are not only conceptually interesting but also practically relevant.

CHAPTER 4

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RELAXING GREEN OUTCOMES

In Chapters 2 and 3, I demonstrated that the dilemma of green democracy may be avoided by relaxing the conditions of robustness to pluralism and consensus preservation. By relaxing robustness to pluralism, we restrict the domain of admissible inputs to the decision procedure in such a way that any non-green opinions are dismissed at the outset (i.e., exogenous domain restrictions) or transformed into green opinions through mechanisms such as deliberation (i.e., endogenous domain restrictions).[72] By relaxing consensus preservation, we overrule any unanimous agreement on non-green alternatives through either exogenously restricting the decision power of individuals (e.g., eco-authoritarianism, eco-technocracy or eco-libertarianism) or endogenously restricting permissible collective decisions (e.g., substantive/procedural environmental rights).

However, not all of the above approaches can always guarantee the generation of green outcomes. To recapitulate, with endogenous domain restriction, green decisions are very much dependent on whether the transformation mechanism used can successfully change opinions from non-green to green. With eco-technocracy, eco-libertarianism and procedural environmental rights, green decisions also depend on whether the relevant individuals/collective bodies choose the green alternative in the first instance. Therefore, even if these approaches can *in principle* circumvent the dilemma of green democracy, green decisions are still *in practice* subject to contingencies.

In addition, while some other approaches are relatively certain to ensure green outcomes, they fall short of being procedurally desirable. With exogenous domain restriction, the dismissal of non-green opinions from being admitted to the decision-making process renders democracy trivial. With eco-authoritarianism and substantive environmental rights, these are often considered less democratic or undemocratic

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[72] Note, again, that the latter can also take place when the decision procedure is applied into a context where it so happens that all opinions are green, which is contextual congruence. See Chapters 1 and 2 for more discussion.

since they are biased towards a particular decision alternative, i.e., they are not neutral when considering different alternatives. In other words, guaranteeing green outcomes through these approaches comes with a price, which hampers their procedural attractiveness. This tension is, in fact, the essence of the dilemma of green democracy: the tension between democratic procedures and green outcomes.

Given the practical uncertainty and the procedural cost of guaranteeing green decisions, is there an alternative approach which avoids the dilemma of green democracy? In this chapter, I shall consider the relaxation of green outcomes – the last condition of green democracy. As introduced in Chapter 1, this means that the decision procedure does not deliver green outcomes all the time, and that these can be achieved by adopting a pragmatic or a probabilistic form of green democracy. Pragmatic (green) democracy does not presume that decision outcomes from democracy must be green; and probabilistic green democracy requires only that the decision procedure should *tend to*, rather than will always, generate green outcomes.

I shall focus on whether pragmatic (green) democracy and probabilistic green democracy are normatively desirable as well as practically feasible. As pointed out in Chapter 1, probabilistic green democracy is often associated with certain deliberative arrangements which may boost the likelihood of green outcomes. Examples include a number of innovative mechanisms for collective (environmental) decision-making, such as mediation, policy dialogues, consensus conferences, public consultation, public enquiries, citizens' juries and citizen initiatives/referendums (Smith, 2001, 2003; Dryzek, 2005). At the same time, pragmatic (green) democracy may also be realised through these innovative mechanisms, although they do not necessarily generate green outcomes. More generally, this also covers various forms of collective action in the political arena, such as those of green political parties, environmental interest groups and environmental social movements. On the basis of how decisions are achieved through these democratic processes, I shall ask how we can assess the normative desirability and the practical applicability of pragmatic/probabilistic (green) democracy.

My discussion is structured as follows. In Section 4.1, I explain the idea of relaxing green outcomes and illustrate how pragmatic/probabilistic (green) democracy can be realised in practice. In Section 4.2, I examine, from a constraint-based perspective, the normative desirability of pragmatic/probabilistic (green) democracy realised as four different models of collective action/mechanisms. In

Section 4.3, I consider the idea of pragmatic/probabilistic (green) democracy more generally and provide another similar assessment from an outcome-based perspective. In Section 4.4, I draw some conclusions.

4.1 Relaxing green outcomes: The idea

It is arguable that a wide range of opinions do exist in a pluralistic context, and that any decision procedure which does not preserve consensus is undemocratic, but it does not follow that there is no decision procedure which can both be responsive to pluralism and respect unanimity. Consider a situation in which all individuals vote for some option x, and that the decision procedure has to accept any unanimous profile of non-green choices as admissible inputs. As long as x is an admissible decision output, the procedure can then simply choose x as the collective decision. Generally, such a procedure can be either democratic (e.g., unanimity rule, super-majority rule or simple majority rule) or undemocratic (e.g., sub-majority rule, oligarchic rule or dictatorship).

For rational decision-making, it may be desirable, however, to deem at least some decision outputs to be inadmissible. One minimal demand is that inconsistent outputs should be disallowed. For example, if the output is a set of accepted propositions containing mutually contradictory alternatives such as A and not-A – meaning that A is simultaneously chosen and not chosen – then it is considered inconsistent and hence rejected. Other possible cases of inconsistency include non-transitive rankings of alternatives (e.g., A is preferred to B, B is preferred to C, and C is preferred to A) and combinations of mutually conflicting judgments on propositions (e.g., D is true, 'if D then E' is true, and E is false). A further reasonable demand is that any incomplete decisions should be rejected. For instance, if the decision agenda has n alternatives to be ranked or propositions to be judged, and if the number of alternatives ranked or propositions judged is fewer than n, then, similarly, the output is considered incomplete and thus rejected.

In what ways can we resolve the dilemma of green democracy by relaxing the condition of green outcomes? Let us consider again the 'Enviro Island' scenario in which its assembly members are deliberating and deciding on whether or not to ban idling vehicle engines. The condition of green outcomes requires, quite simply, that

the decision procedure should generate green outcomes under all circumstances. Suppose, again, a decision whereby the assembly supports the ban is green, whilst the decision whereby the assembly rejects the ban is non-green. Consider the case where all the assembly members choose the latter alternative.

In its original formulation, green democracy is a decision procedure which satisfies the conditions of robustness to pluralism, consensus preservation as well as green outcomes. If we use green democracy in collective decision-making in the example above, then, by virtue of its robustness to pluralism, this will accept the unanimous profile of non-green choices by the assembly members as admissible inputs, i.e., rejecting the ban. Moreover, by virtue of consensus preservation, it will adopt such a unanimous non-green choice as the collective choice. In this case, a non-green collective decision will be produced, which contradicts the condition of green outcomes. This is, once more, the dilemma of green democracy.

It appears that we can avoid the dilemma of green democracy by relaxing green outcomes. This can easily be achieved, as introduced in Chapter 1, by abandoning altogether the demand that the decision procedure should always generate green outcomes. In this way, green democracy is reduced to pragmatic (green) democracy. It is pragmatic in the sense that the decision procedure only ensures the production of collective decisions for practical problem solving, but does not seek to pursue any particular decision outcomes, such as green outcomes.[73] In other words, there is no stipulation regarding what the decision outcomes should always be, say whether they should be green or non-green. Therefore, a non-green decision, as in the above example, is entirely valid, and the dilemma of green democracy is bypassed.

While pragmatic (green) democracy is a sufficient and straightforward approach to relaxing green outcomes, it is far from necessary. To escape the dilemma of green democracy, what we minimally need is to exempt the requirement for green outcomes from the special case under which there is a unanimous choice of the non-green alternative. That is to say, the decision procedure will be allowed in this special case to generate a non-green outcome, and the three conditions of green democracy will become mutually consistent. In order to achieve this, we can reformulate green democracy in such a way that the decision procedure is *likely* to produce, rather than always producing, green outcomes. This is probabilistic green

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[73] Recall that it is the decision *procedure*, i.e., green democracy, that is pragmatic rather than the decision *outcomes*. See footnote 44 in Chapter 1.

democracy, where the likelihood of green outcomes is measured and expressed in numerical values between 0 and 1 (inclusive), with 0 and 1 denoting, respectively, the absence of chance and the absolute certainty of the generation of green outcomes.

In one sense, both reformulated models of green democracy can be understood as relaxing the likelihood of green outcomes to an extent which is less than absolute certainty. For pragmatic (green) democracy, there is no specific requirement with regard to the likelihood of the decision outcomes generated being green, and hence, depending on the context of decision-making, the probability of green outcomes can lie anywhere between 0 and 1 (inclusive). With probabilistic green democracy, one understanding is that the decision procedure should ensure that green outcomes are more likely to be produced than non-green outcomes. As long as there are only green and non-green alternatives on the agenda, and a decision is required, the probability of green outcomes should be greater than 0.5 (and smaller than or equal to 1).

Nevertheless, the exact decision procedure for pragmatic/probabilistic (green) democracy should not be determined purely on the basis of how likely it is to generate green outcomes. Since both models of green democracy are reformulated by relaxing only the condition of green outcomes, we should expect the decision procedure to at least satisfy the conditions of robustness to pluralism and consensus preservation. As discussed in Chapters 2 and 3, any decision procedure without domain restriction is robust to pluralism, and any procedure which does not overrule unanimous choices preserves consensus. A number of decision procedures, ranging from unanimity rule to simple majority rule and even dictatorship, fulfil both these conditions, provided that they do not restrict the domain of individual inputs.

Evidently, dictatorship is undemocratic even though it satisfies the condition of consensus preservation. In some circumstances, however, dictatorship can be appealing in terms of generating green outcomes. Imagine that there are five assembly members in the 'Enviro Island' scenario. Member 1 is very concerned about the air quality, and he/she will support the ban on idling vehicle engines. Meanwhile, the remaining four members are more sympathetic to the concerns of professional drivers, and they will have no hesitation in rejecting the ban. Then, the collective decision is more likely to be green if Member 1 becomes a dictator empowered to make a decision for the group than if all the five members make the decision together by simple majority rule or unanimity rule. The highest probability of green outcomes, in this case, is reached by a dictatorial, rather than a democratic,

procedure which only has to respond to a single green input (assuming the dictator's input is green). This poses a challenge in the selection of decision procedure for probabilistic green democracy.

From the perspective of producing green outcomes, in order to justify using a democratic decision procedure instead of dictatorship for probabilistic green democracy, we must find ways to boost the likelihood of green outcomes democratically. One approach, as discussed in Chapter 2, is to restrict the domain endogenously by deliberation, and as long as there are a sufficient number of individuals arriving at green opinions after deliberation, it is likely that a green outcome will be reached in a democratic manner. For instance, with simple majority rule, if, after deliberation, at least three out of five members are convinced to support the ban, then this is enough to produce a green decision. On the other hand, with super-majority rule (with a threshold of $^3/_4$) and unanimity rule, a green decision is possible only if there are, respectively, four and five members who, after deliberation, reach an opinion against the proposal.[74]

In practice, there are a number of innovative mechanisms for environmental decision-making which rely significantly on deliberation (Smith, 2001, 2003; Dryzek, 2005; see Section 4.2). It has been found that, in some empirical cases, deliberation contributes, in such a participatory form of democracy, to more ecologically informed decision outcomes (Smith, 2001).[75] In broad terms, these deliberative arrangements can be classified according to the forms of decision outcome they seek to achieve. For some, consensus is expected by the end of deliberation, whereas for others, consensus as such is not required. Mediation (or, more generally, alternative dispute resolution), consensus conferences and citizens' juries are examples of the former category, whilst public consultation, public inquiries, deliberative opinion polls and citizens' initiatives/referendums belong to the latter category.[76]

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[74] Note that deliberation is not necessary for the required likelihood of green outcomes. In some contexts, green outcomes are likely because there is wide or even unanimous acceptance of green opinions at the outset. This represents a case of contextual congruence, one possibility for endogenous domain restriction as introduced in Chapters 1 and 2.

[75] Examples include deliberative opinion polls run by public utilities in Texas, United States, as well as citizens' jury experiments on the creation of wetlands in the Fens, United Kingdom, and waste management in Hertfordshire, United Kingdom. The deliberative outcomes in these cases are perceived as more ecologically friendly (see Smith, 2001, p. 83 for details).

[76] For an overview of these deliberative mechanisms, see Smith (2001), pp. 77-89 and Dryzek (2005), pp. 100-108. See also Section 4.2.

Whenever deliberation is intended to deliver consensus, collective decisions are made in a manner which corresponds to unanimity rule in aggregation. Mediation, for example, is intended to reach, in the end, a resolution to conflict which is agreed upon by all involved individuals or collective parties. Likewise, with consensus conferences and citizens' juries, by the end of deliberation, all individuals involved must, as a group, come up with verdicts plus a series of recommendations on certain policy issues. With all the above mechanisms, if there is no separate (voting) procedure other than deliberation for resolving disagreement, then, as long as there is any single individual who does not accept the opinion(s) of the remaining individual(s) after deliberation, there will be no collective decision.

On the other hand, when consensus is not expected from deliberation, collective decisions can be achieved by certain means subsequent to deliberation.[77] For instance, public consultation allows citizens to access and comment on policy issues proposed by government, whilst government may not take any of these comments into account when making final policy decisions. Similarly, public inquiries enable citizens to make depositions and arguments on certain policy proposals in a public forum setting, but the power to draw conclusions is vested in the inquiry panel members. In contrast, with initiatives/referendums, citizens may both deliberate and vote directly on certain policy issues, thus reaching collective decisions together.

If probabilistic green democracy is intended to deliver *collective* decisions by *all* deliberating individuals involved as a group, then, from the list of the above, the most relevant deliberative arrangements are initiatives/referendums. As to how collective decisions are reached after deliberation, this depends on the specific decision procedure used for the aggregation stage of initiatives/referendums. Simple majority rule is, arguably, the most prominent democratic aggregation procedure.

No matter which of the above deliberative arrangements is adopted, the key point is that probabilistic green democracy may be incorporated into deliberative arrangements in order to boost the likelihood of green outcomes. The decision procedure is equivalent to unanimity rule if deliberation aims to deliver consensus, whereas simple majority rule is commonly used when aggregation follows

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[77] It may also be that not all deliberating individuals have the power to determine any collective decisions, as in the case of deliberative opinion polls where only individual opinions are collected after deliberation (see Fishkin, 1991; 1995).

deliberation. On the other hand, since pragmatic (green) democracy does not have to meet any particular target with respect to the likelihood of green outcomes, deliberation is not required at all, and either simple majority rule or unanimity rule may be used as the decision procedure.

It is worth noting that, in real-world environmental politics, pragmatic/probabilistic (green) democracy may also take the forms of other types of collective action, from direct actions such as those of environmental social movements to more representative mechanisms involving green political parties as well as environmental interest groups. In these cases, the decision-making processes are more complex, and depend on how decisions are reached within and between different parties/groups. That said, the decision procedures used are still expected to satisfy the conditions as identified for the innovative mechanisms above.

In sum, we may avoid the dilemma of green democracy by relaxing the condition of green outcomes, which means that we renounce the requirement that green democracy should generate green outcomes under *all* circumstances. This can be achieved by pragmatic (green) democracy, which does not require any specific decision outcomes, such as green outcomes, to be produced. Alternatively, we may adopt probabilistic green democracy, which only requires a sufficiently high probability of generating green outcomes. In the remaining sections of this chapter, I shall explore the normative desirability of both reformulated models of green democracy from the perspectives of procedure and outcome.

4.2   The desirability of relaxing green outcomes: Constraint-based perspective

As pointed out in Chapter 3, we may discuss the normative desirability of an idea, action or institution from two perspectives, i.e., constraint-based and outcome-based perspectives. To reiterate, from an outcome-based perspective, we evaluate the idea, action or institution concerned on the basis of what outcomes it leads to, whilst from a constraint-based perspective, we evaluate, instead, how those outcomes emerge on the basis of some outcome-independent (normative) criteria.

In order to evaluate from an outcome-based perspective whether it is desirable to relax the condition of green outcomes, we keep the conditions of robustness to pluralism and consensus preservation constant and assess whether each reformulated

model of green democracy satisfies certain requirements for the likelihood of green outcomes. We can specify the following benchmark:

(BGO) Likelihood of green outcomes: The probability of green outcomes being produced is greater than 0.5 (though typically below 1).

We may also assess the desirability of relaxing green outcomes from a constraint-based perspective. To do this, we first formulate some outcome-independent benchmarks that a democratic decision procedure should satisfy. Then, we examine whether each of the reformulated models of green democracy satisfies these procedural benchmarks. Arguably, a minimally democratic decision procedure should meet the demands of robustness to pluralism and consensus preservation as specified for green democracy. By relaxing *only* green outcomes in order to circumvent the dilemma of green democracy, both the above conditions are taken as constant.

Nevertheless, we may also escape the dilemma of green democracy by relaxing more than just the condition of green outcomes. For probabilistic green democracy, for instance, (endogenous) domain restrictions may take place in such a way that the decision outcomes are more likely to be green, such as by deliberation or contextual congruence. Whenever the domain of inputs is restricted exogenously or endogenously, the condition of robustness to pluralism is no longer fulfilled. By contrast, pragmatic (green) democracy demands only the relaxation of green outcomes. In this sense, probabilistic green democracy with a restricted domain is less procedurally attractive than pragmatic (green) democracy in terms of the diversity of inputs accepted.

But is pragmatic (green) democracy or probabilistic green democracy procedurally attractive in a general sense? Consider two minimal conditions which we can reasonably expect any democratic decision procedures to satisfy:

(BR) Anonymity: All individuals have the same power in determining decision outcomes.[78]

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[78] This mirrors benchmark (BR1) as described in Chapter 3. Note that super-majority rule also satisfies the requirement of anonymity.

(BI) Inclusiveness: All individuals are granted the same opportunity to express their opinions on decision alternatives.

Note that the inclusiveness condition is less demanding than the condition of robustness to pluralism. For the latter, individual opinions are taken as given and fixed, and all such opinions, as long as they are logically possible, should be accepted as admissible to the decision procedure. For the former, however, individual opinions are changeable, as long as the individuals concerned are willing to change their opinions and express them accordingly. Under the inclusiveness constraint, the domains of individual inputs may either remain unrestricted or be restricted *endogenously*. Therefore, even if endogenous domain restriction is in place, probabilistic green democracy can still satisfy the inclusiveness condition.

As mentioned in Section 4.1, pragmatic/probabilistic (green) democracy may be realised in the form of certain deliberative mechanisms (e.g., citizens' juries or referendums) or forms of collective action. The former mechanisms open up opportunities for citizens to participate in making decisions on environmental as well as other collective issues. These are instances of direct or participatory democracy in which there is direct and persistent citizen participation in collective decision-making. Another example of direct democracy is participation in social movements which aim to achieve certain social goals through planned political actions such as campaigns, public demonstrations or even illegal protests. These movements are common in environmental politics, and include the environmental justice movement in the U.S. as well as a number of nature conservation and anti-nuclear power movements in Western Europe.

These environmental social movements very often involve environmental interest groups, such as Greenpeace, Friends of the Earth (FoE), Earth First!, the World Wide Fund for Nature (WWF) and the like. Some of these groups possess sufficient resources to exert influence on environmental policy making by, for example, lobbying politicians and civil servants, offering consultative services to governments and filing judicial reviews. With strategies or actions such as these, most citizens are not directly engaged in devising or implementing them, except when they become core members of these groups possessing the corresponding authority. We regard such political influence by environmental interest groups as a process of indirect democracy.

At the same time, (green) political parties are also crucial actors in environmental politics. In Western liberal democracies, there are existing green parties which successfully seek government power as a means of achieving their visions of environmental sustainability, notably *Die Grünen* in Germany as well as *Groen!* and *Ecolo* in Belgium. Even in countries where green parties are less popular, it is not unusual for mainstream political parties to incorporate environmental concerns into their political agenda. For example, environmental protection has been stressed in the party manifestos of the Liberal Democrats (U.K.) for the past 20 years (Carter, 2007).

We may, from here, classify the above mechanisms/forms of collective action into two categories of pragmatic/probabilistic (green) democracy. Indirect (green) democracy includes any political actions by, or processes involving, (green) political parties and environmental interest groups. Direct or participatory (green) democracy covers environmental social movements as well as a list of innovative mechanisms which, more generally, enhance democratic participation (see Figure 4.1).
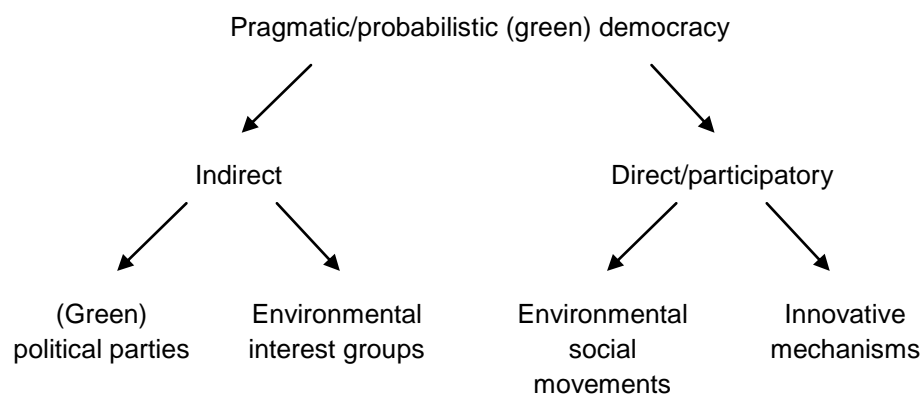
Figure 4.1: Topology of pragmatic/probabilistic (green) democracy

The desirability of indirect democracy I: (Green) political parties
In a contemporary liberal democracy, a straightforward approach to pursuing green collective decisions is to secure power in either the executive or the legislative government. This can be achieved by (green) political parties winning political office through elections, where members of each of these parties share similar beliefs and preferences defined as green. Once seats have been secured by members of a party, they are able to express green opinions on the political agenda and to take part in

determining decision outcomes accordingly.[79] Very often, these green opinions are representative in the sense that they are in line with the views and interests of the relevant party as well as its voters. Whether these opinions are eventually adopted depends on whether they are collectively accepted by members of the cabinet or of assembly.[80]

It appears that the presence of such parties within government does not in any sense guarantee green decision outcomes. Rather, this depends on a number of contextual factors, including the popularity of green opinions as well as the relative political strength of parties holding such green opinions. Imagine, in the 'Enviro Island' scenario, that one of the five assembly members belongs to a green party and expresses a green opinion which supports the ban on idling vehicle engines. Suppose the rest of the assembly members are not affiliated to green parties, while most of their constituencies strongly support the ban. Then, it is probable that such a green opinion will also be adopted by the remaining four assembly members *regardless of* their party affiliations. In this case, following the condition of consensus preservation, it is true that a green outcome is likely.

However, there is another possibility. Suppose most constituencies are convinced to oppose the ban. For assembly members with no green party affiliation, given that their decisions are based on opinions of their respective constituencies, it is similarly likely that they will reject the ban. For the remaining assembly member, his/her decision is less straightforward if the green party he/she belongs to is supportive of the ban. Facing such a dilemma, the assembly member may still reject the ban by negotiating with or even withdrawing from his/her party. He/she may alternatively choose to abstain. In either case, a non-green outcome (i.e., rejecting the ban), in accordance with consensus preservation, is highly possible.

While a green public opinion is crucial in order for green party representatives in government to maintain a green position, this does not necessarily bring about a

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[79] Note that the collective environmental decision-making concerned here takes place in the executive/ legislative government, which is not to be confused with the internal decision-making *within* (green) political parties.

[80] There are plenty of examples of such indirect forms of pragmatic/probabilistic (green) democracy in the real world (Carter, 2007; Doyle and McEachern, 2008). *Die Grünen* in Germany are considered one of the strongest green political parties. They successfully entered the federal parliament in 1983, and persistently achieved high electoral performance in three consecutive federal elections from 1994 to 2002. In addition, between 1998 and 2005, they formed a coalition government with another mainstream political party, the Social Democrats (SPD). The last two decades also saw green political parties winning parliamentary seats and/or taking part in coalition governments in Belgium, Finland, France and Sweden, as well as in non-European democratic countries like Australia and New Zealand.

green collective decision. To generate such a decision, the green party/parties concerned also has/have to be sufficiently strong relative to other political parties. One condition is that there must be a large proportion of green party representatives elected as members of the cabinet/assembly. For example, a cabinet is formed solely of members from one or more green parties or a majority of seats in the assembly are secured by green party representatives. *If* the cabinet/assembly is composed in this way, *then* it is sensible to project that green parties are strong enough to bring about green decisions in the political process.[81]

Is indirect democracy, in which green political parties play a role, attractive in the procedural sense? According to benchmark (BI), pragmatic/probabilistic (green) democracy is desirable only if all individuals are equal in terms of having the opportunity to express their opinions on the decision alternatives. Here, the 'individuals' may mean either political representatives in the cabinet/assembly or the constituencies who elect these political representatives. If it is the former interpretation, benchmark (BI) is satisfied as long as the cabinet/assembly does not grant more opportunity to any political representatives, on the basis of their party affiliations, for expressing opinions in the political process.

Now, consider the latter interpretation. In many representative democracies with a fair and transparent electoral system, most citizens have the right to select, in elections, candidates from their respective constituencies to become political representatives, such as assembly members. Insofar as each citizen votes in accordance with certain formal procedures, his/her choice on the ballot will be considered valid and accepted as admissible.

However, a possible limitation is that individual citizens may have little influence on which candidates run in the election in their constituencies or what political issues are a focus of the election campaign. Without the power of agenda setting, citizens are constrained in terms of their choice of candidates to vote for. For instance, if a citizen desires to vote for a candidate from a green political party, but there is no such candidate running in the citizen's constituency, he/she will not be

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[81] Even if green parties do not succeed in controlling the cabinet/assembly, they may still be able to influence the collective decisions of these bodies in some other ways. For instance, green parties can line up with certain influential individuals or groups, through political exchange of benefits or other means, in order to exert pressure on the cabinet/assembly to adopt green opinions. However, there is no guarantee that, by using such a strategy, green parties will succeed in turning collective decisions into green ones. It is, after all, possible that the assembly members will remain unyielding in terms of accepting any green opinions.

able to express this opinion on the ballot. Similarly, if a citizen wants to vote for a candidate from a party with a narrow focus on environmental problems, but the parties to which all candidates are affiliated adopt a broad focus on a variety of social issues, his/her opinion can in no way be reflected on the ballot. Therefore, *under these circumstances*, benchmark (BI) is not entirely satisfied.

Next, consider benchmark (BR) which stipulates that individuals should share equal power in determining decision outcomes. Whether the indirect form of pragmatic/probabilistic (green) democracy satisfies this benchmark depends on what is considered a decision outcome. *If* this refers solely to the result of an election, as long as the electoral system is designed so that all citizens' votes have equal weight (e.g., simple majority rule), *then* benchmark (BR) is fulfilled. This is because all individual citizens are able to determine equally, with their vote, which candidate(s) should become their political representatives in the government. On the other hand, if this refers specifically to policy outcomes from the political process, it is apparent that the elected political representatives in the cabinet/assembly and individuals who are also members of a (green) party possess more power than other representatives/citizens in deciding whether the collective outcomes are green. This is because the former individuals can influence collective decisions on an issue-to-issue basis through the political process as well as by lobbying government officials, party members and/or other politicians.

All in all, whether the implementation of an indirect form of pragmatic/probabilistic (green) democracy by (green) political parties is desirable is contingent on circumstances. Whilst green decisions may be generated as a result of these (green) parties exerting influence in the political process, this can in no sense be guaranteed. It can be the case that such indirect democracy is inclusive of all individual opinions and grants all individual political representatives/citizens equal decision-making power, i.e., satisfying benchmarks (BI) and (BR). However, this is also restricted by the tendency for citizens to lack agenda-setting power in elections as well as for individuals, be they citizens in general or members of a (green) party, not to all have equal power to determine decision outcomes.

The desirability of indirect democracy II: Environmental interest groups

While (green) political parties aim to pursue green collective decisions by winning political office, environmental interest groups seek the same goal by exercising influence from outside the executive/legislative government. Usually, these interest groups have a specific issue focus on the environment and formulate and advocate green opinions on behalf of individuals who share similar interests, values and principles of environmental protection. In this way, individual citizens do not directly participate, but may rely on these interest groups to make collective environmental decisions. Ultimately, these groups strive to create an impact on the political process in order to bring about green outcomes.[82] [83]

As in the case of (green) political parties, the sheer fact that these environmental interest groups are present does not bring about green collective decisions in the government.[84] Broadly speaking, there are two strategies which these groups may adopt in order to bring about green outcomes, namely (1) political negotiations or lobbying; and (2) protests, confrontations or disruptions. The first strategy is mainly steered by members of environmental groups where citizens in general are not directly involved. The second strategy, on the other hand, may also cover direct action/participation by citizens who are not members of any environmental groups. In the context of the pragmatic/probabilistic (green) democracy discussed in this section, I refer to groups adopting the first strategy.[85]

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[82] These impacts include setting political agendas on the environment, advocating green opinions in the decision-making process, as well as achieving substantive green outcomes with pro-environmental policies and institutional arrangement. See Carter (2007), p. 165; Kriesi et al. (1995), pp. 209-212; and van der Heijden (1999), pp. 202-203.

[83] There are a number of environmental interest groups operating in real-world pragmatic/probabilistic (green) democracy. Examples include non-governmental organisations (NGOs) at the international level – Greenpeace, Friends of the Earth (FoE) and the World Wide Fund for Nature (WWF) – which were created in the 1960s/1970s. Some other national groups are also on the list, such as the Sierra Club and the Environmental Defense Fund in the U.S. and the Wildlife Trusts and the Royal Society for the Protection of Birds (RSPB) in the U.K. They have existed for more than half a century, and in particular, the history of the Sierra Club dates back to 1892. In addition, since the 1980s, radical grassroots groups have also emerged, including Earth First! and the Campaign to Protect Rural England. Nowadays, these environmental interest groups play a significant role in collective environmental decision-making in most liberal democracies (Carter, 2007; Doyle and McEachern, 2008).

[84] Again, note that the collective environmental decision-making concerned here takes place in the executive/legislative government, which is not to be confused with the internal decision-making *within* environmental interest groups.

[85] Environmental groups which adopt the second strategy are, rather, crucial actors in a direct form of pragmatic/probabilistic (green) democracy, which will be addressed in the following sub-section on environmental social movements.

If, in indirect democracy, environmental interest groups are expected to negotiate or lobby as part of the political process, what they can achieve from negotiations or lobbying is crucial to the generation of green outcomes. Consider again the 'Enviro Island' scenario. Imagine that there exists an environmental NGO which campaigns against idling vehicle engines. Its membership consists mainly of the citizens of 'Enviro Island' who also contribute most of its funding by donations. The NGO is concerned about what the assembly will decide on the proposal, enters into dialogue with the assembly members and attempts to persuade all of them to support the ban on idling vehicle engines. *If* the NGO is successful in such negotiation/lobbying, *then* the ban will probably be accepted collectively by the assembly members, resulting in a green outcome.

Under what circumstances may we expect the NGO to succeed in such a negotiation/lobbying? There are at least two possibilities. First, the NGO may have strong public support. This may be the case, in the above example, when its membership is large and covers a significant number of citizens of 'Enviro Island'. A membership base as such is, to a certain extent, an indicator of public opinion on the proposal, and it is likely that the assembly members will be incentivised to adopt the same opinion since they are accountable and answerable to their constituencies. Such political support may be boosted by the NGO educating the community on the detriment of idling vehicle engines and/or by media coverage of citizens' and NGO's support to the ban.

Second, there may be only relatively little political resistance to the green opinion of the NGO. This is possible if the NGO is able to minimise the intensity or the effects of any opposing opinions. For instance, the NGO may establish personal and/or institutional connections to political parties to which the assembly members are affiliated. If it happens that any assembly members appear unlikely to support the ban, the NGO may have the aid of the parties (particularly leaders in hierarchical parties) in pressurising these assembly members to change their opinions. Another example would be if the NGO manages to win over any other individuals or groups holding the contrary opinion (e.g., professional drivers' associations) who are lobbying the assembly members to reject the ban. This may happen if the NGO argues successfully against opposing individuals/groups so that the assembly members come to believe that the opinion of the latter is undesirable (or less desirable).

There does not appear to be any guarantee that environmental interest groups, such as (green) political parties, will necessarily be able to achieve green outcomes from the political process. For both possibilities above, the pre-requisite is that the NGO in question can gain sufficient support either from stakeholders among the general public or from individuals/groups with the power to determine decision outcomes. It is perfectly possible, however, for these pre-requisites not to be met. For example, most citizens may not identify with the values and principles of the NGO, or they may specifically reject the green opinion it advocates. It may also be the case that the rival interest groups are relatively stronger than the NGO in terms of financial resources and political relations with the assembly members/political parties. Either of these may jeopardise the chances of the NGO bringing about the green outcome.

While the indirect form of pragmatic/probabilistic (green) democracy (in which environmental interest groups take a role) cannot ensure the generation of green outcomes, how appealing is it, if at all, from the procedural perspective? We can offer an assessment based on the benchmarks of inclusiveness (BI) and anonymity (BR).

As in any arrangements for indirect democracy, collective decisions are made by political representatives on behalf of individual citizens. Broadly speaking, citizens may participate, though in a very limited sense, in decision-making by voting for certain candidates during periodic elections. At the same time, citizens may also exert influence on the political process by financing environmental interest groups and/or becoming members.[86] In this way, whether an individual citizen can put forward his/her opinion in such a process depends, to a considerable extent, on whether he/she is related to an environmental interest group as a member and/or donor.

It is obvious, however, that not all individual citizens have equal incentives, time or resources to join groups and play an active role in them. Moreover, even if some citizens are able to contribute financially to these groups, the impact they can make is likely to be less significant than that made by government and transnational corporations/organisations which can supply large sums in funding and sponsorship. As a result, the opinions of 'non-member' citizens may not be as salient as, and

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[86] Note that individual citizens may also exert influence on political parties by becoming party members and/or financing the parties.

hence less influential than, the opinions of 'member' citizens. Likewise, the opinions of individual citizens with fewer donations may also be marginalised by those of government/corporate donors. Benchmark (BI) is, therefore, in general not satisfied.

Now, consider benchmark (BR). This concerns the relative decision-making power of different interest groups (including non-environmental groups), or how these groups exert influence in the political process at large.[87] In most liberal democracies, particularly when the decision issue concerned is controversial, different interest groups will be asking for different orientations of the decision outcome which are in line with their own values and beliefs. In the example above, an environmental NGO may co-exist with other groups which hold a non-green opinion. To some extent, whether a group can succeed in getting its opinion adopted as the collective decision depends on its relative political strength. If a group has more financial resources, a better relationship with government and/or more public support in general, it is also likely to possess more power to determine decision outcomes, compared with other groups. *In this case*, individuals in different groups do not have equal power to determine collective decisions in the political process. *If so*, *then* benchmark (BR) is not satisfied.

In conclusion, the desirability of the indirect form of pragmatic/probabilistic (green) democracy (in which environmental interest groups take a role) is context-dependent. As in the case of (green) political parties, there is no guarantee that green opinions will always be adopted as collective decisions. To see whether an environmental interest group can succeed in securing green decision outcomes, we may further ask whether it receives sufficient public support or whether political resistance to the green opinion is relatively small. Such indirect democracy does not *generally* satisfy benchmark (BI), *given* the tendency of citizens to have unequal incentives, time and resources to exert influence in these interest groups. On the other hand, whether benchmark (BR) is satisfied depends on how decision-making power is shared between individuals between different groups.

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[87] Note that benchmark (BR) also concerns the relative decision-making power of individuals *within* an environmental interest group. However, this is, as mentioned, beyond the scope of our discussion.

The desirability of direct/participatory democracy I: Environmental social movements

As pointed out, in contemporary liberal democracies the role of environmental interest groups is far from limited to political negotiations or lobbying. Very often they are also involved in various environmental social movements. A social movement involves a kind of political action intentionally committed by a collection of individuals who are loosely connected by some shared values, beliefs and aspirations in pursuit of a social goal. Instead of relying on the institution of indirect/representative democracy, they pursue the social goal through direct action, such as boycotts, protests, demonstrations or disruptions, which may also include law-breaking activities. Such direct action may be co-ordinated and assisted by interest groups and other formal or informal groups/organisations, particularly in the case of those which have radical political agendas and advocate political activism. For environmental social movements, the social goal is environmental protection (or green collective decisions in general), and environmental interest groups are often seen to take part in these.[88]

In what ways can environmental social movements bring about green collective decisions? Consider the 'Enviro Island' scenario again. Suppose there is a list of actors who support the ban on idling vehicle engines, which may include some green political parties, environmental interest groups, as well as individual citizens and activists. We can imagine at least the following types of direct action.

First, there may be passive resistance where, say, several parties/groups jointly issue a statement supporting the ban, or initiate a petition for citizens to sign and express their demand for the ban. Second, the resistance may also be less passive but mild, such as some parties/groups/activists starting a campaign to boycott taxi drivers who idle their car engines. Third, there can be more proactive non-violent resistance, in which parties/groups/activists mobilise citizens to attend protests or

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[88] There are many instances of environmental social movements in the real world (Carter, 2007; Doyle and McEachern, 2008). One of the most remarkable examples is the environmental justice movement which emerged during the 1980s in the U.S. with some grassroots environmental groups (e.g., the Centre for Health, Environment and Justice), demanding solutions to environmental problems which would also address issues of social justice regarding class, poverty, gender and race. Another example in the U.S. is the eight-year Cove/Mallard forest campaign begun in 1992, which involved a number of environmental groups such as Earth First! and the Sierra Club in campaigning to prevent the forest from being removed for roads and logging. In the U.K., Earth First! was also one of the 250-300 active groups in the anti-roads movement during the 1980s and 1990s, where the movement itself campaigned against the massive development of road networks. Today, these environmental social movements constitute an essential element of environmental politics in many liberal democracies.

demonstrations to voice their objections to idling vehicle engines either in a peaceful way or even with disruptions and violence.[89] An environmental social movement may adopt one or more of the above forms of direct action.

It is apparent that pragmatic/probabilistic (green) democracy involving environmental social movements does not produce green collective decisions under all circumstances. The generation of green outcomes depends on the impact which the movements create on the political process, which is, to some extent, a matter of the size and intensity of the movements. Roughly speaking, the more individuals/groups participate in a movement to express an opinion, the more likely it is that this will be perceived as public opinion and hence adopted as the collective decision. Similarly, a movement where all actors share a unified political theme and demand tends to arouse the awareness of the government and the rest of the public more easily. For example, a demonstration with a good number of citizens and a unified issue focus in favour of supporting the ban on idling vehicle engines is likely to make the green opinion more salient in the political process.

Nevertheless, a movement of a significant size and intensity does not in any sense guarantee the collective decision it is demanding. For instance, even if there is a remarkable number of citizens mobilised to protest and make a unified claim against idling vehicle engines, the assembly may still have all sorts of incentives to dismiss it from consideration. This can be the case when the assembly members are affiliated to, or have close relationships with, political parties and/or interest/professional groups, such as certain professional drivers' associations, which reject the ban on idling vehicle engines. In other words, the protestors' anti-pollution demand may well be marginalised by the private interests of the political representatives and other stakeholders. In that case, it is hard to tell whether the movement would generate any impact leading to a green outcome.

Is such a form of direct democracy procedurally attractive? Consider benchmark (BI). In social movements, in order to have their opinions expressed, an individual must first be able to participate. *In principle*, every individual citizen is free to carry out any direct action, so long as they are informed of such an opportunity and have sufficient time and other resources. However, *for some types of*

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[89] The disruptions and violence may involve activists blockading, destroying property or even taking their officials hostage. While the disagreement over the idling vehicle engines issue, as in the 'Enviro Island' scenario, may not be sufficiently intense to arouse such disruptions/violence, these forms of direction action are often noticed in the debate over nuclear energy policy.

direct action, not all citizens are willing to participate. For example, we can reasonably postulate that, even if all citizens strongly hold the green opinion in favour of supporting the ban, they are likely to differ as to the means by which they prefer to express that opinion. Whilst some may accept only petition signing or boycotts, but object to any protest or demonstration, others may take an opposite view. *If* there is such a divergence in terms of the choice of direct action and *if* not all choices can be accommodated simultaneously, *then* some individuals may still lack the appropriate channels for expressing their opinions. *In this case*, benchmark (BI) is not satisfied.

Besides, there is the question of whether the issue focus of the movement covers the variety of opinions which citizens may want to express. For instance, there may be a demonstration in which all citizens are willing and able to participate, but its central theme demanding, say, the rejection of idling vehicle engines, may be too narrow or general to reflect accurately the opinion of every resident. Whilst the opinions of some residents may coincide with the central theme, others may hold opposite or hybrid views – they may reject an across-the-board ban as such; or they may support the ban only if it grants exemptions to a certain number of taxi drivers. In the former case, they have no reason to attend the demonstration, whereas in the latter case, they may find it difficult to put forward their opinion precisely, given the overwhelming theme of the demonstration. *If* either case occurs, *then* not all individual opinions can be expressed equally, which hinders the fulfilment of benchmark (BI).

Let us turn to benchmark (BR). It is obvious that, if the decision outcomes refer to collective decisions from the political process, then decision-making power does not generally rest with any individuals/groups in the social movements, but with some other individuals/groups that these movements aim to influence. In our scenario, it is the assembly members, rather than the green parties, environmental interest groups or individual citizens, who exclusively hold the power to make the final decision about whether or not to support the ban. *In this view*, the assembly members and the citizens are not equal in determining the decision outcomes, and hence benchmark (BR) is not satisfied.

However, does this mean that, apart from the assembly members, all other individuals/groups are equal because none of them may determine directly the decision outcomes? This is true only if it is impossible for any of these

individuals/groups to influence the assembly members in any way. Otherwise, these individuals/groups may still be unequal, because different individuals/groups may differ in terms of their influence on decision outcomes. For example, some citizens, as pointed out, may hold a non-green or hybrid opinion, which hinders them from joining the movement advocating the strictly green opinion. They may then initiate separate movements, or make use of other channels, to express their divergent opinions to the assembly members as well as to the rest of the public. Amongst these camps, each constitutes its own networks and resources which may generate unequal impact on the assembly members' decision. In other words, it is possible that some citizens, due to the stronger camp they are in, will possess more decision-making power than other residents. *If* this is the case, *then* benchmark (BR) remains unsatisfied.

In summary, whether the direct form of pragmatic/probabilistic (green) democracy (in which environmental social movements take a role) is desirable is dependent on contexts. While it is possible that, by participating directly in these movements, individuals/groups will be able to exert influence in the political process and bring about green collective decisions, there is no guarantee that this will be the case. The generation of green outcomes, rather, depends on the political impact which the movements create. At the same time, the inclusiveness benchmark (BI) is not fulfilled, *unless* the movement concerned covers all kinds of direct action that individuals wish to take as well as all kinds of opinions that they wish to express. The anonymity benchmark (BR) is not generally satisfied *if* there are different camps with varying degrees of strength in terms of influencing the decision-making process.

The desirability of direct/participatory democracy II: Innovative mechanisms

Apart from carrying out direct action as in environmental social movements, individual citizens may also participate directly in pragmatic/probabilistic (green) democracy through certain innovative mechanisms. As briefly touched on in Section 4.1, a number of deliberative mechanisms are in practice available for collective environmental decision-making. In particular, consensus conferences, citizens' juries, deliberative opinion polls and initiatives/referendums are examples of innovative

mechanisms for democratic decision-making.[90] These mechanisms are innovative in the sense that they are designed specifically to boost the scope and level of citizen participation in the political process, which goes beyond the traditional forms of democracy as exemplified by periodic elections and public consultations (Smith, 2009). With such innovative mechanisms, it becomes possible for individual citizens to pursue green collective decisions without carrying out direct action or relying on (green) political parties and environmental interest groups.[91]

Under what circumstances may we expect green outcomes to emerge from any of these innovative mechanisms? This depends on the specific decision procedure used. As discussed in Section 4.1, collective decisions may be reached by deliberation alone or by deliberation plus aggregation. The former requires a universal consensus among the individuals involved, which is equivalent to unanimity rule. In other words, green collective decisions are available if, and only if, all individuals unanimously agree on a green opinion. This applies to most generic instances of consensus conferences and citizens' juries where deliberation is the only procedure for resolving disagreement.

With initiatives/referendums, on the other hand, green outcomes are produced as long as the green opinions available for post-deliberation aggregation are sufficient to pass the threshold of the aggregation procedure. If the aggregation procedure is simple majority rule, then what is required for green collective decisions is support for green opinions by more than 50% of individuals. But as the aggregation procedure becomes more stringent, such thresholds will increase accordingly (e.g., for unanimity rule the threshold is 100%).

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[90] Although mediation (or alternative dispute resolution) is also an example of such innovative mechanisms, it involves directly only a small number of representatives rather than the general citizens. Hence, I deliberatively omit this from our discussion below.

[91] There are many empirical examples where citizens have participated in making environmental decisions through these innovative mechanisms (Smith, 2001). Since the 1980s, consensus conferences have been seen in Denmark, the Netherlands and the U.K. on various scientific and technological issues, including genetic engineering and radioactive waste management (see also Joss and Durant, 1995; Palmer, 1999). Besides, citizens' juries have also been held, since the 1970s, in Germany, the U.S. and the U.K. on environment-related policy, such as energy, land-use and waste management issues (see also Stewart et al., 1994; Smith and Wales, 1999; Kuper, 1997). Furthermore, there have been a number of deliberative opinion polls held in Australia, the U.S. and the U.K., with some of these touching on the planning of energy resources (see also Fishkin, 1995). As for initiatives/referendums, these have been widely used by environmentalists in Switzerland, since the 1970s, to place environmental issues on the political agenda (see also Kobach, 1994). These innovative mechanisms are very often accompanied by a process of deliberation (see also discussion of probabilistic green democracy in Section 4.1).

It is straightforward to see why none of these innovative mechanisms can guarantee green collective decisions. Suppose, in the 'Enviro Island' scenario, some citizens put forward an initiative to solicit the opinions of the public regarding the ban on idling vehicle engines. The citizens are then asked, in the ensuing referendum, to express their opinions in ballots, and the votes will be counted using simple majority rule. A green outcome, therefore, depends on whether more than 50% of the votes are for supporting the ban, which, in turn, depends on the number of individuals holding the green opinion. Arguably, such a 'number' varies in different circumstances, and we can at least imagine a case where a majority of citizens choose to reject the ban on the grounds of its nuisance brought about to drivers. Such a possibility also applies to the rest of the innovative mechanisms.

Even if we assume that an overwhelming majority of voters will choose to reject the proposal, it is still possible that the collective decision will, in the end, not be green. This is because the outcomes from referendums (and other innovative mechanisms) do not necessarily become the collective decisions from the political process. If a decision mechanism is binding, then it is a legal requirement for the corresponding results to be respected and adopted as the final collective decisions. By contrast, if a decision mechanism is non-binding or advisory, then it is up to the government and other political actors to interpret the results and judge what implications they should have for collective decisions. In other words, when the referendum, as in the above example, is non-binding, its green outcome may eventually be turned into a non-green outcome. For instance, the assembly members may ignore the majority opinion in favour of supporting the ban and choose to adopt the opposite opinion. Therefore, unless a decision mechanism is binding, even if its outcome is green we cannot guarantee a green collective decision *in the end*.

How attractive are these innovative mechanisms in the procedural sense? First, consider the inclusiveness benchmark (BI). To ensure that all individuals share the same opportunity to express their opinions, it is necessary for them to be given an equal opportunity to participate in these decision-making mechanisms. However, for some kinds of innovative mechanisms, there is a natural restriction in terms of the number of people who may participate. For example, a typical consensus conference or citizens' jury involves 12 to 25 individuals, whereas the number for a deliberative opinion poll rises to between 200 and 466 individuals (Smith, 2001). For initiatives/referendums, this is less significant, and it is often possible to engage a

much larger number of participants. As long as the number of individuals who want to participate exceeds the maximum number of participants allowed, some individuals will have to be excluded from such an opportunity to express their opinions. For instance, if thousands of individuals intend to participate, benchmark (BI) does not hold, *in this context*, for consensus conferences, citizens' juries or deliberative opinion polls.[92]

Another aspect of benchmark (BI) concerns whether different individual opinions are equally admissible to the decision-making process. This very much depends on the decision procedures used in these innovative mechanisms. As pointed out, any decision procedure, including simple majority rule and unanimity rule, which does not discard any possible individual opinions is inclusive in this sense. Note, though, that even if deliberation is in place where some opinions are transformed, or the domain of inputs is restricted endogenously, this is inclusive in the way that all individuals are still able to get their opinions (revised or not) accepted as admissible for decision-making. Therefore, benchmark (BI) can be satisfied for all these innovative mechanisms including those with deliberative arrangements, *depending on the decision procedures used*.[93]

Similarly, the fulfilment of benchmark (BR) is also a matter of the decision procedures used in these innovative mechanisms. An anonymity requirement is implied in many democratic decision procedures, including simple majority rule, super-majority rule and unanimity rule. In this way, for consensus conferences and citizens' juries, *if* collective decisions are made by deliberation in a manner which corresponds to unanimity rule, *then* all individuals are presumed to have the same decision-making power, which satisfies benchmark (BR). Likewise, for initiatives/ referendums, *if*, eventually, collective decisions are obtained by an aggregation

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[92] At the same time, there is another issue concerning the selection methods of these innovative mechanisms. For consensus conferences, volunteers are recruited through advertisements and written applications which will then be selected based on socio-demographic criteria. This implies that only citizens who are willing and able to spend time submitting their applications will have an opportunity to be selected. This could mean a disadvantage to those with higher time cost and those who are less literate. For citizens' juries and deliberative opinion polls, citizens are selected on a random basis, but the selected citizens are free to choose whether or not to eventually participate. This means that some citizens (i.e., those randomly selected), through accepting and/or rejecting the invitations to citizens' juries/deliberative opinion polls, have the power to influence the remaining citizens' opportunity to participate (see Smith, 2001).

[93] Note that this is not applicable to deliberative opinion polls since there are no *collective* decisions made.

procedure which counts all individuals' votes equally, *then* benchmark (BR) is fulfilled.[94]

Thus, pragmatic/probabilistic (green) democracy, apart from by environmental social movements, may also be realised by a number of innovative mechanisms, including consensus conferences, citizens' juries, deliberative opinion polls, as well as initiatives and referendums. There is no guarantee of green collective decisions, but rather these depend on certain contextual factors, such as the number of individuals holding green opinions, the decision procedures used and whether the outcomes from the mechanisms are binding. As to whether these mechanisms are inclusive (i.e., benchmark (BI)), this depends on whether they can accommodate all the individuals who wish to participate. The decision procedures used are, at the same time, crucial for determining whether the innovative mechanisms are inclusive of different types of individual opinions (i.e., benchmark (BI)) and whether all individuals have equal decision-making power (i.e., benchmark (BR)).

Summary

So far we have surveyed four different models of pragmatic/probabilistic (green) democracy. Whilst collective environmental decision-making may be left in the hands of political representatives, (green) political parties and environmental interest groups as in indirect/representative democracy, citizens may also participate directly in environmental social movements and through innovative mechanisms. Broadly speaking, none of these forms of pragmatic/probabilistic (green) democracy can *guarantee* green collective decisions, and their procedural desirability depends very much on factors that vary in different circumstances.

4.3 The desirability of relaxing green outcomes: Outcome-based perspective

In the previous section, we examined the desirability of relaxing green outcomes from a procedural perspective. More specifically, we evaluated the procedural attractiveness of pragmatic/probabilistic (green) democracy on the basis of two procedural criteria (i.e., inclusiveness (BI) and anonymity (BR)). Both criteria are

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[94] *Ibid.*

outcome-independent, which means that the substantive outcomes of a decision procedure have no effect on the formulation of these criteria, and these criteria will not be used to evaluate the decision outcomes.

In this section, I offer an outcome-based assessment of both reformulated models of green democracy using an epistemic framework for democracy. In order to determine whether a decision procedure is desirable from an outcome-based perspective, we need first to assume that there is an independent criterion for assessing a correct or good outcome, which can be labelled as the 'truth'. A decision outcome, for instance, can be good if it maximises the total utility of the individuals involved; or it can be correct if it is morally desirable. As to what precise criterion of correctness or goodness should be used, this varies in different contexts.

For pragmatic (green) democracy, the truth is not set as green, since green outcomes are not presumed to be always correct. This is particularly the case when there are controversies over which decision alternative/outcome is green. It remains unclear, for instance, whether a decision to abandon nuclear power, as advocated by many environmental interest groups and movements, is strictly green, because the lack of nuclear power supply may imply more air pollution and energy crisis to follow as a result of using more fossil fuels instead. Probabilistic green democracy, by contrast, although green outcomes are no longer necessary, still requires decision outcomes to be *more likely than not* to be green. Here, the truth for probabilistic green democracy can be set as green.

A decision procedure is desirable from an outcome-based perspective if it is good at producing decision outcomes which correspond to the truth. This is sometimes regarded as 'tracking the truth'. In this way, pragmatic (green) democracy is desirable if it tracks the truth, or is good at generating correct decision outcomes. On the other hand, probabilistic green democracy is desirable if it is good at generating green decision outcomes, or 'tracks the green outcomes'.

Refer to the 'Enviro Island' scenario again. Suppose we know that there is a correct decision, or truth, which can be either 'to support the ban' (*B*) or 'to reject the ban' (not-*B*). For pragmatic (green) democracy to be desirable, it should be good at producing either *B* or not-*B* as the decision outcome, depending on which of these represents the truth. For probabilistic green democracy to be desirable, it should track

B if *B* is the green outcome; and likewise, it should track not-*B* *if* not-*B* is the green outcome.[95]

First, consider pragmatic (green) democracy. Let us regard each of the assembly members as 'competent' if, and only if, he/she reaches a decision in the following ways: (1) he/she is more likely to accept *B* than not-*B* if, and only if, *B* is the truth; and (2) he/she is more likely to accept not-*B* than *B* if, and only if, not-*B* is the truth. If a member is competent in this sense, he/she is more likely than not to make a correct individual decision. When all members in the group are, at least roughly, equally competent in this sense, the first benchmark of truth-tracking, namely competence (BT1), is satisfied.

At the same time, if all members in the group make their own decisions independently of the others, then the second benchmark of truth-tacking, independence (BT2) is also satisfied. Both benchmarks are necessary components of the following theorem:

> **Condorcet's jury theorem:** Assuming competence (BT1) and independence (BT2), and that all individuals truthfully express their opinions as to what the correct decision is, a collective decision by simple majority rule is more likely to be correct than a decision made by any single individual, and the probability of a correct majority decision approaches certainty as the number of individuals increases (Condorcet, 1785; Grofman, Owen and Feld, 1983).

This theorem will be discussed more extensively in Chapters 6 and 7. Here, the key message is that pragmatic (green) democracy *with simple majority rule* is more likely than not to generate correct decisions or to track the truth only if benchmarks (BT1) and (BT2) are met. In other words, according to Condorcet's jury theorem, it is necessary for benchmarks (BT1) and (BT2) to be satisfied in order for pragmatic (green) democracy (with simple majority rule) to track the truth, or to be desirable from an outcome-based perspective. It appears that whether these conditions can be fulfilled depends on the contexts to which pragmatic (green) democracy is applied. This dependence as such also carries implications for desirability in practice, which will be examined in the following subsection.

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[95] Let us assume, for the moment, that supporting the ban is *not necessarily* the green decision, whilst rejecting the ban is *not necessarily* the non-green decision.

Now, consider probabilistic green democracy. This differs from pragmatic (green) democracy in the way that it specifies a specific value of likelihood or probability of green decision outcomes. Assuming that we know which decision outcome is green, for probabilistic green democracy, the green decision is equivalent to the correct decision or the truth as in pragmatic (green) democracy. As suggested in Section 4.1, one formulation of this demand is that the probability of green outcomes should be greater than 0.5 (while smaller than or equal to 1).

We can make use of Condorcet's jury theorem for evaluating probabilistic green democracy by substituting 'green outcomes' for 'truth'. We regard an assembly member as 'competent' if, and only if, he/she decides in the following manner: (1) he/she is more likely to accept *B* than not-*B* if, and only if, *B* is the *green* decision; and (2) he/she is more likely to accept not-*B* than *B* if, and only if, not-*B* is the *green* decision. If all assembly members in the group are roughly equally 'competent' in this sense (i.e., in tracking the green outcomes), then the competence benchmark (BT1) is satisfied. Likewise, if all individual decisions are made independently from those of other individuals, then the independence benchmark (BT2) is also satisfied.

To boost the likelihood of green outcomes, as mentioned in Section 4.1, deliberation may be incorporated into probabilistic green democracy, and the decision mechanism used may consist simply of deliberation or of deliberation plus aggregation. In the former case, the decision procedure used is equivalent to unanimity rule, and green outcomes are produced if, and only if, *all* individuals accept the green alternative as their individual decision.

For probabilistic green democracy *with deliberation only*, the probability of green outcomes is greater than 0.5 if, and only if, the following conditions hold: (1) the probability of each individual accepting the green alternative as his/her individual decision, $p(G)$, is greater than 0.5, i.e., benchmark (BT1); and (2) since a decision procedure with deliberation only mirrors unanimity rule, $[p(G)]^n$ is greater than 0.5 (where *n* is the number of individuals). We can note that, as the number of individuals increases, the value of $p(G)$ has to be boosted in order to satisfy the latter condition. Therefore, if $p(G)$ is constant, then the greater the number of individuals, the less likely the latter condition is to be satisfied. This shows that probabilistic green democracy with deliberation only is not generally desirable from an outcome-based perspective (see also Chapter 7).

On the other hand, in the latter case, where aggregation follows deliberation, probabilistic green democracy is accompanied by an aggregation procedure such as simple majority rule. Since one understanding of such probabilistic green democracy requires that the probability of green outcomes should be greater than 0.5, from Condorcet's jury theorem we infer that such a requirement is satisfied only if both benchmarks (BT1) and (BT2) are satisfied. In other words, similarly to the case of pragmatic (green) democracy, it is necessary for benchmarks (BT1) and (BT2) to be satisfied in order for probabilistic (green) democracy (with simple majority rule) to be desirable from an outcome-based perspective, or more precisely, to track the green outcomes.

From the discussion above, when simple majority rule is used, both benchmarks are necessary conditions for either reformulated model of green democracy to be desirable from an outcome-based perspective. Below, I briefly suggest how we can make sense of the practical applicability of pragmatic/probabilistic (green) democracy with simple majority rule on the basis of these two benchmarks.

Implications for practical applicability

According to Condorcet's jury theorem, pragmatic/probabilistic (green) democracy with simple majority rule is desirable because it is more likely than not that the correct or green decision will be produced. This is conditional on both benchmarks (BT1) and (BT2) being satisfied, as well as on all individuals expressing their opinions truthfully. In other words, in order to realise pragmatic/probabilistic (green) democracy which achieves the desired decision outcomes, we must ensure that the above benchmarks are satisfied in practice. This, again, depends on contextual factors, and I highlight several issues below for consideration.

The first issue to consider is whether all the individuals concerned express truthfully their opinions about what the correct or green decision is. This requirement is more likely to be met when individuals do not have any strategic incentive for hiding their genuine opinions. For example, if the assembly members in the 'Enviro Island' scenario have no intention of controlling the final decision of the group, it is less likely that they will manipulate the decision outcome by expressing opinions which diverge from those which they originally saw as correct or green. On the other

hand, if the assembly members desire an alternative final decision, e.g., 'to reject the ban', they may be incentivised to still reject the ban. This can be so even if they have identified the other alternative, i.e., 'to support the ban', as the correct or green decision. If this is the case, their competence is not reflected in their actual individual decisions.

The next issue to consider concerns the competence benchmark (BT1). This benchmark assumes that all individuals are more likely than not to accept the correct or green alternative as their individual decisions, in which the value of the corresponding probability is greater than 0.5 (and smaller than or equal to 1). In some cases, however, some individual(s) may be more competent than others in identifying the correct or green decision. For instance, it is possible for experts and professionals to be able to determine certain scientific matters connected to the policy issues on the basis of scientific evidence and method. At the same time, it is also possible for environmental activists and the citizens affected to be more conscious about the environmental implications of various policy issues, and hence more capable of deciding from the green perspective. If there is such an individual or group of individuals with exceptional competence, and if he/she is assigned as the dictator or they are assigned as the oligarchs, pragmatic/probabilistic (green) democracy with simple majority rule may not track the truth or generate green outcomes as effectively as dictatorship or oligarchy.

The final issue to consider concerns the independence benchmark (BT2). This benchmark assumes that all individuals make their decisions independently of which decision alternative is correct or green. Under this assumption, individuals are not expected, at least, to directly adopt the decisions of others as their own decisions. In any decision-making process, however, whenever individuals are allowed to interact with each other, there is a chance that they will simply follow the decisions of some others in the group. If this happens, then benchmark (BT2) no longer holds.

The issue above is particularly relevant to probabilistic green democracy with deliberative arrangements when individuals are, after deliberation, unable to formulate their own opinions but simply adopt those of others. For example, if one of the assembly members becomes the opinion leader in the assembly throughout the deliberation, whilst the remaining members are reluctant to form their own opinions, they may be tempted to adopt the leader's opinion in the end.

On the other hand, even for pragmatic/probabilistic (green) democracy without deliberation, individuals may also follow the views of opinion leaders outside the group in making their own decisions or may be influenced by information cascades. For instance, the assembly members may perceive that the opinions of professional drivers are more accurate than all other opinions, and believe that the correct decision is not to support the ban on idling vehicle engines. Likewise, the assembly members may also trust that the opinions of environmental activists must always be green, and believe that 'to support the ban' is the green decision. Although it is possible that these decisions will still reflect the correct or green decisions, they will no longer be attributed to the competence of all assembly members, but rather to that/those of the opinion leader(s) inside or outside the group (Dietrich and List, 2004). In this case, pragmatic/probabilistic (green) democracy with simple majority rule is not necessarily more desirable than dictatorship/oligarchy (e.g., by these opinion leaders) in terms of producing collective or green collective decisions.

Thus, from an outcome-based perspective, the desirability of pragmatic/probabilistic (green) democracy in the sense of truth-tracking and the generation of green outcomes depends on whether benchmarks (BT1) and (BT2), i.e., competence and independence respectively, are fulfilled. If both benchmarks are met, and all individuals express their opinions truthfully, then, in accordance with Condorcet's jury theorem, pragmatic/probabilistic (green) democracy with simple majority rule is more likely to produce collective or green decisions than other undemocratic decision procedures such as dictatorship. As to whether both modified versions of green democracy are practically applicable, this depends on whether these benchmarks of Condorcet's jury theorem are fulfilled, which, of course, varies in different circumstances.

4.4   Concluding remarks

In this chapter, I have considered the last escape route from the dilemma of green democracy, i.e., relaxing green outcomes. In Section 4.1, I briefly illustrated how the condition of green outcomes can be relaxed by reformulating green democracy as pragmatic (green) democracy and probabilistic green democracy. I also suggested how pragmatic/probabilistic democracy can be realised in practice as an institutional

model for collective (environmental) decision-making, such as in mediation, consensus conferences and initiatives/referendums.

In Section 4.2, I examined, from a constraint-based perspective, whether pragmatic/probabilistic (green) democracy is normatively desirable by considering four possible models, i.e., (green) political parties and environmental interest groups as in indirect democracy as well as environmental social movements and innovative mechanisms as in direct/participatory democracy. I demonstrated why green collective decisions cannot be guaranteed with any of these models. As to whether they are procedurally appealing in terms of satisfying the benchmarks of inclusiveness (BI) and anonymity (BR), broadly speaking, this very much depends on circumstances.

In Section 4.3, I offered a similar assessment of the desirability of pragmatic/ probabilistic (green) democracy from an outcome-based perspective. Using Condorcet's jury theorem, I showed how pragmatic/probabilistic (green) democracy with simple majority rule can be desirable, if it satisfies two benchmarks of competence (BT1) and independence (BT2), and the individuals concerned express their opinions truthfully. Only if all these (or functionally similar) conditions are satisfied is pragmatic/probabilistic (green) democracy with simple majority rule more likely to generate correct or green decisions. Moreover, whether both reformulated models of green democracy are practically applicable depends on whether the above conditions are realised in practice.

It is worth remarking that, in Chapters 2 to 4, I introduced a number of ideas which are highly relevant to the construction of democratic institutions for environmental decision-making, and these will be discussed in further detail in the remaining chapters of this thesis. They include deliberation and aggregation as a single decision procedure (Chapter 5), the problem of the discursive dilemma or majoritarian inconsistency (Chapters 5 and 6), technocratic decision-making (Chapter 6), as well as Condorcet's jury theorem (Chapters 6 and 7). While I do not intend to claim that relaxing green outcomes is the best escape route from the dilemma of green democracy, I shall take pragmatic (green) democracy as a sample starting point in order to illustrate, using the above ideas, how we may substantively *design* environmental-democratic institutions.

PART II

DESIGNING ENVIRONMENTAL-DEMOCRATIC INSTITUTIONS

In the first part of the thesis, I have demonstrated a dilemma for green democracy (Chapter 1), identified three possible escape routes and assessed their respective procedural and outcome-based qualities (Chapters 2, 3 and 4). The dilemma is that there exists no decision procedure satisfying the three stipulated conditions of green democracy, i.e., robustness to pluralism, consensus preservation and green outcomes. To circumvent the dilemma, at least one of the conditions must be relaxed, and this is achievable by adopting any of the three escape routes (where each route itself corresponds to an entire family of possible approaches). The major lesson is that green democracy is logically possible only if the dilemma is avoided. This is regarded as a minimal benchmark for building environmental-democratic institutions.

In this second part of the thesis, I examine several substantive issues associated with building environmental-democratic institutions which meet the minimal benchmark. In Chapter 5, I discuss how the normative goals of deliberation and the discursive dilemma constrain the *input* condition of a deliberative-democratic institution. I suggest that the requirements of post-deliberation consensus have to be defined in a way that avoids the discursive dilemma. In the subsequent two chapters, I give two examples of how interdisciplinary enquiries can supplement political theory in designing better environmental-democratic institutions. In Chapter 6, I illustrate how we can reconcile the tension between two prominent positions in environmental decision-making, i.e., technocracy and democracy, by borrowing a concept drawn from cognitive science, computer science and sociology: distributed cognition. This suggests how the *responsiveness* condition of the institution can be modified so as to make such a reconciliation possible. In Chapter 7, finally, I turn to the theory of cognitive dissonance, drawn from psychology, and focus on the *output* condition of the institution. The theory illuminates insights into designing *practicable* democratic institutions for collective (environmental) decision-making.

Each of these three chapters (5-7) addresses a stand-alone issue connected to the dilemma of green democracy (Chapter 1). While these issues can be addressed independently, they all concern some of the fundamental questions in both democracy and environmental decision-making. The discursive dilemma in Chapters 5 and 6 sets out the logical constraints of (deliberative-) democratic institutions and illustrates the necessary trade-offs between several desiderata for democracy. The tension between technocracy (or epistemic quality) and democracy (or procedural fairness) in Chapter 6 underpins the perennial debate on how scientific and

technological matters in society should be decided. The idea of cognitive dissonance in Chapter 7 also echoes the experiences of many people in deciding whether or not to change their habits for a certain good, such as driving less for a better environment.

The arguments in all three chapters are based on the assumption that the condition of green outcomes is relaxed (Chapter 4). Moreover, deliberation is considered an ingredient of democratic institutions not because of its function of domain restrictions in circumventing the dilemma, but because of its procedural and epistemic values in (environmental-) democratic decision-making. Chapter 5 focuses on the procedural aspect of deliberative decision-making. Chapter 6 deals with both the procedural and epistemic aspects of a 'distributed' decision procedure (which can comprise both deliberation and aggregation). Finally, Chapter 7 discusses the epistemic aspect of deliberative decisions.

CHAPTER 5

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THE DISCURSIVE DILEMMA AND NORMATIVE DELIBERATIVE ENDS

In Chapter 2, I have demonstrated that the input domain of green democracy can be endogenously restricted through deliberation in such a way that the dilemma of green democracy is avoided. This, however, depends on the complexity of the *decision agenda*, i.e., the set of issues under consideration for a collective decision. For agendas which are more complex because they involve judgments on multiple interconnected propositions, we are faced with a potential problem of inconsistent collective outcomes when simple majority rule is used as the decision procedure. This problem – the discursive dilemma – can be avoided by accepting only certain sets of individual opinions, although some combinations of green opinions may be rejected as a result, making the decision procedure less inclusive. Is the discursive dilemma restricted to decision procedures requiring green or particular outcomes? Can we get around the discursive dilemma by relaxing the condition of green outcomes? What broader lessons can we learn in constructing an institution with arrangements of both deliberation and aggregation?

This chapter is concerned with a practical issue of institutionalising deliberative democracy, namely the issue of what should determine the target outcome, as well as the end, of a deliberative process. Ideally, deliberation terminates 'naturally' once a universal consensus on an agenda is reached. Think about a three-member selection committee deliberating on which of three candidates should receive a job offer. If all committee members can eventually agree on a particular option at a particular time, deliberation may simply end at that time. But if the members' opinions are so diverse that they may not be able to reach a single agreement, the answer will become less straightforward.

Theoretically, deliberation can last forever or until universal agreement on *everything* on the agenda is reached. However, this is far from feasible in certain circumstances when the agendas are more complex, the number of decision-makers

increases and/or time and resources are limited. Realistically, in making environmental as well as other collective decisions, we need a standard in order to stipulate the goal, as well as the cut-off point, of deliberation. What is this standard? Why is it relevant to the discursive dilemma? How can we make use of it in institutionalising deliberative democracy?

I address the above questions in four sections. In the first section, I address why deliberation alone is not a sufficient condition for institutionalising decision-making, and why it has to be supplemented by aggregation, forming an institution characterised by 'deliberation-then-aggregation' (DTA). In the second section, I explain the two normative ends of deliberation proposed by Dryzek and Niemeyer (2006/2007), i.e., meta-consensus and inter-subjective rationality, and establish two theses to represent the claims of each. In the third section, I argue that, for DTA institutions, these two theses are incorrect because the two normative ends may produce profiles of post-deliberation opinions for subsequent aggregation which lead to the discursive dilemma. This can be regarded as the deliberative cut-off problem. In the fourth section, I discuss a solution to the deliberative cut-off problem by reformulating the notion of meta-consensus in a way less general and more precise than that suggested by Dryzek and Niemeyer. In the fifth section, I draw some conclusions.

5.1 Institutionalising deliberative democracy

First, consider two hypothetical examples:

> **The plastic bag example:** A small citizens' jury consisting of three individuals has to decide what to recommend to its government in order to reduce the consumption of plastic bags in retail stores. The group receives three proposals, i.e., to educate (P_E), to tax (P_T), and to ban (P_B), and is asked to rank these proposals in an order of preference. What will happen if this is tackled through deliberative democracy?

> **The airport example:** The government proposes to build a third runway at an airport. Five members of the board of an activist group, based in a district nearby, are deciding whether or not to campaign against the proposal. Apart from the decision outcome, i.e., to campaign (C) or not to

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campaign (not-*C*), they also aim to identify, for the group, reasons for supporting the agreed outcome, to be used in preparing the relevant press release. How can deliberative democracy deliver both the decision and the supporting reasons?

Each of these examples involves a different type of decision problem. In the plastic bag example, the group has to place several alternatives in an overall order of preference. In the airport example, the group has to formulate judgments in the form of accepting or rejecting a set of propositions which represent both the outcome and the supporting reasons as well as their mutual relationship. In other words, the nature of the *agendas* in the two examples differs in the sense that the plastic bag example is a problem of ranking several alternatives, whilst the airport example is a problem of judging several propositions.

Deliberative democracy consists, concretely, of two key elements, i.e., deliberation and democracy. Cohen (2007) says that "deliberation, generically understood, is about weighing the reasons relevant to that decision with a view to making a decision on the basis of that weighing" (p. 219), and "democracy is a way of making binding, collective decisions" (p. 219). Accordingly, deliberative democracy in both the above examples may involve something like what follows.

In the plastic bag example, deliberation takes place among the three individuals on some relevant reasons, such as whether P_E is preferable to P_T, P_T to P_B, and P_E to P_B, as well as on a collective decision on placing the three proposals in a particular order of preference. Likewise, in the airport example, there is deliberation among the five individuals on certain relevant reasons. These may include: (1) whether building a third runway at the airport causes serious pollution; (2) whether the group should campaign against any policy that causes serious pollution; and (3) whether the group should campaign against building a third runway at the airport.

As a decision-making procedure, deliberative democracy should possess the following generic properties (Figure 5.1; see also Cohen, 1989; Elster, 1998; Estlund, 1993):

Input condition: It is *inclusive* of all individual opinions.

Responsiveness condition: All individual opinions are *equal* in terms of determining the decisions through a *well-reasoned* process.

Output condition: It aims at achieving *rational consensus*.
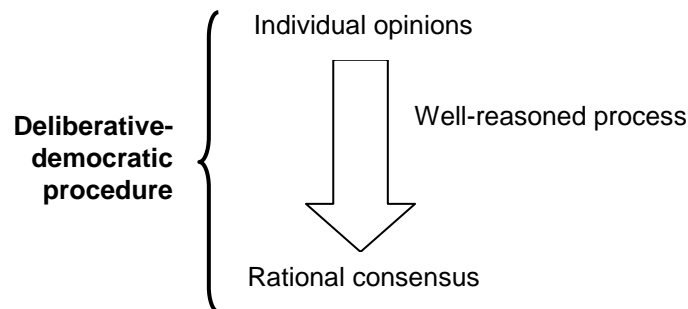
Figure 5.1: Deliberative democracy as a decision-making procedure

Let us take the airport example as an illustration. The input condition is fulfilled if, and only if, all the opinions of all five individuals are accepted as admissible to the procedure. The responsiveness condition is satisfied if, and only if, all five individuals participate equally in a deliberation process which comprises well-reasoned dialogues, and that no single one of them has more or less power in influencing the final decision outcome. The output condition is met if, and only if, some form of rational agreement is reached among the five individuals with reference to a certain standard of rationality. A decision-making procedure is said to be deliberative-democratic if it fulfills all three conditions.

It is reasonable to expect a satisfactory deliberative-democratic institution to be able to deal, at least, with the two kinds of agendas in the plastic bag and airport examples. Hartz-Karp and Briand (2009) broadly define the institutionalisation of deliberative democracy as "incorporating deliberative activities into the legally-constituted political decision-making structures and processes of a community or society" (p. 128). In other words, to institutionalise deliberative democracy means building, within the given legal, political and societal framework, an institution which comprises a deliberative-democratic procedure for collective decision-making across various kinds of agenda, including problems of ranking and of judgment, as in my two examples.

Deliberation: Sufficient for decision-making?
Is deliberation an adequate institution for the desired kind of decision-making? This depends on whether the deliberative-democratic procedure always, under varying

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circumstances, generates outcomes which correspond to, or lead to, collective decisions. Elster (1986) affirms the likelihood of this:

> "The core of [deliberative democracy] … is that rather than aggregating or filtering preferences, the political system should be set up with a view to changing them by public debate and confrontation. There would not be any need for an aggregation mechanism, since a rational discussion would tend to produce unanimous preferences." (p. 112)

In Elster's view, deliberation makes a separate aggregative procedure redundant. This is because, throughout the process of deliberation, individual opinions are considered to be transformed in such a way that they are likely to converge and become identical in the end. For instance, Elster would predict that, in the plastic bag example, after deliberation, the three individuals will agree on the same order of preference regardless of how diverse their opinions may be beforehand, and this agreed order of preference will then serve as the collective decision. The availability of such unanimous post-deliberation preferences, or universal consensus, makes deliberative democracy a possible stand-alone decision-making procedure.

However, there are at least two problems with Elster's position. The first problem is a *practical* one: depending on the level of disagreement between different individual opinions, the universal consensus required for a decision may be unachievable after deliberation. This is especially the case given the empirical fact of pluralism in contemporary liberal states: there are immense disagreements over not only the explicit choices we make, but also the underlying beliefs and values we hold in justifying these choices. It is not difficult to imagine, when deliberation takes place in practice, a situation in which a set of diverse values, beliefs and choices held by a group of individuals does not converge even after a significant period of deliberation.

If opinions are deeply divided, there is no guarantee that deliberation will be able to unify them into the single opinion necessary for a decision. For example, in the plastic bag example, it is perfectly possible that even after deliberation Individual 1 will prefer P_E to P_T to P_B, Individual 2 will prefer P_T to P_B to P_E, and Individual 3 will prefer P_B to P_E to P_T. In this way, there will be no unanimous agreement on preferences with regard to P_E and P_T, P_T and P_B, or P_E and P_B. If a universal consensus is necessary for a decision, there will be no collective decision placing the

three proposals in an order of preference, and the agenda will be left undecided. This is attributable to the unanimity decision rule used in deliberation. As van Mill (1996) argues:

> "Supra majority rules that demand unanimity, or close to it, can greatly favour the status quo. This is particularly a problem for discourse theorists because the demand for consensus is very restrictive and greatly favours the possibility of non-decisions … we also have to recognize that as long as power remains equally distributed we are unlikely to reach consensus." (p. 750)

Van Mill's assertion that, given the equal consideration of individual opinions in deliberative democracy (i.e., the responsiveness condition), a (universal) consensus is *unlikely* to be achieved may have been overstated. This depends heavily on circumstantial factors such as the size of the group and the complexity of the agenda as well as the (initial) level of discrepancy between individual opinions. A more plausible claim is that, given the responsiveness condition, such universal consensus cannot be *guaranteed*. Even when the size of the group is as small as two, the agenda as simple as a problem of choice between two alternatives and the level of discrepancy as low as disagreement between two alternatives, it is still possible for no universal consensus to be attained after deliberation. This, again, depends on circumstances. But in any case, as Cohen (1989) argues, "even under ideal conditions there is *no promise* that consensual reasons will be forthcoming" (p. 23; emphasis added).

Is the 'no guarantee' issue too trivial to worry about? There are two responses to this question. First, there is empirical evidence that group deliberation does not always induce universal consensus on preferences (List, Luskin, Fishkin and McLean, 2000). This means that unavailability of universal consensus does exist in real-world deliberation. Second, a deliberative-democratic institution is meant to be applicable to a wide range of decision-making scenarios. If an institution allows the possibility of non-decisions, it is flawed in the sense that it fails to deliver (efficiently) its function as a decision-making procedure. Good institutional design requires us to take this bug into account and address it wherever feasible.

The second problem with Elster's view is a *normative* one: deliberation as a decision procedure leads to an undesirable consequence of path dependency. Goodin

(2008) argues that "… conversations, seen as serial processes with dynamic updating, can easily be path dependent" (p. 114). Deliberation is a serial process in which individuals articulate their opinions one by one and are expected to listen to others' opinions and respond. According to Goodin, dynamic updating is involved in such a serial process when individuals revise their opinions while deliberation is going on. For example, in the airport example, suppose Member 1 is the first to speak, followed by Members 2, 3... Before raising his/her opinion, Member 2 has to listen to Member 1's opinion, Member 3 has to listen to Member 2's opinion, and so on. In this way, Member 2 may update his/her opinion after listening to that of Member 1, Member 3 may do the same after listening to the opinions of Members 1 and 2, and so on. What does this have to do with path dependency, and why is it problematic?

Goodin (2008) lists four characteristics of a path-dependent process. First, it is *unpredictable* because many outcomes are possible due to the significant effect and partial randomness of earlier events. In the airport example, the opinion of Member 1 may shape that of Member 2, the opinions of Members 1 and 2 may shape that of Member 3, etc. The opinions of the earlier speakers can lead the later speakers to formulate very different opinions from their initial ones. But this depends on whether or not the later speakers actually revise their opinions after listening to those of the earlier speakers. This results in many possible combinations of individual opinions after deliberation, and it is therefore hard to predict the opinion of the group.

Second, a path-dependent process is an *inflexible* one in which it becomes harder to change the path as the process goes on. In the airport example, supposing that Member 1 has focused his/her opinion on an issue with which Member 2 disagrees, Member 2 can shift to discussing another issue by dismissing the issue which Member 1 has raised. But if we imagine that Members 2, 3 and 4 all agree with discussing the issue which Member 1 has raised, we can then conjecture that it will become more difficult for Member 5 to turn the issue around than it was for Member 2 in the previous case. This precludes the group from revising its opinion with ease in light of any new information.

The third feature is *non-ergodicity*, which means that small, accidental events cannot be ignored and affect future choices. Suppose, in the airport example, Member 1 formulates his/her opinion entirely by tossing a coin, and other individuals may not be aware of this. As long as Member 1's opinion is not dismissed by any

individuals in subsequent deliberation, this randomly formed opinion will be fed into the deliberative process and may eventually heavily influence the collective opinion.

Finally, a path-dependent process may be an *inefficient* one when the outcome of the path taken may generate lower utilities than that of the alternative path not taken. Suppose again, in the airport example, that Member 1's opinion is based on a purely normative assessment of *C*, and every individual's opinion follows this, then it is possible that the opinion of the group will eventually be restricted to this line of reasoning. However, the group may be better off focusing, instead, on the feasibility aspect of *C* and following the 'normative assessment' path may be less efficient.

Goodin echoes Pierson's (2000) claim that deliberation is a process "in which sequencing is critical. Earlier events matter much more than later ones, and hence different sequences may produce different outcomes" (p. 253; cited in Goodin, 2008, p. 112), and hence that it is "fundamentally arbitrary" (Goodin, 2008, p. 114). This is arbitrary because deliberative decisions hinge on an irrelevant factor of sequencing. The opinion of the group, as in the airport example, may be reversed if, instead, Member 5 becomes the first speaker, followed by Member 4 and then Member 3, and so on. Unless there is a separate justification for a particular sequencing to be adopted, the effect of any kind of sequencing should be regarded as arbitrary. Such arbitrariness thus weakens the normative foundation for collective decision-making solely by deliberation.

Beyond deliberation?

Given the nature of deliberation as a serial process with dynamic updating, what can possibly be done to eliminate or minimise the effect of path dependency? Goodin (2008) suggests the rule of 'first talk, then vote', which distinguishes deliberation from decision-making, and where the latter function is served by aggregation once deliberation has been completed. I regard an institutional arrangement adopting such a rule for decision-making as 'deliberation-then-aggregation' (DTA).

A DTA institution, as Goodin would agree, overcomes the problem of path dependency by replacing dynamic updating with periodic updating at the moment of decision-making. Let me explain this. In dynamic updating, as mentioned, individuals revise their opinions as deliberation proceeds. By contrast, in periodic updating, individuals "just file away information as it comes in, and only update

[their] beliefs on the basis of everything in the file at one particular point in time"
(Goodin, 2008, p. 111). This means that individuals do not have to revise their
opinions immediately during the process of deliberation.

How can periodic updating be achieved in deliberative democracy? If
deliberation is not intended as the means of reaching decisions, according to Goodin,
individuals will experience less temptation to revise their opinions on the spot, but
will be able to do so after all others' opinions have been expressed. For instance, in
the airport example, if a decision need not be made during deliberation, the five
individuals will have time to examine all the opinions together and make revisions to
their own opinions wherever appropriate. It no longer matters whether Member 1
speaks first, since anyone who comes after the first in the sequence can articulate
his/her opinion without considering that/those of the previous speaker(s). The five
individuals can wait until the end of the deliberation to revise their opinions.

Arguably, aggregation, following deliberation, is a suitable mechanism for
decision-making. Since aggregation is a process where everyone submits his/her vote
at the same time, periodic rather than dynamic updating is taking place during this
stage of decision-making (Goodin, 2008, p. 110). The influence of path dependence
on decision-making is therefore minimised, if not entirely removed, since sequencing
now plays a less significant role in determining collective decisions. This is why a
DTA institution, consisting of separate processes of deliberation and aggregation,
can relieve the problem of path dependency, and hence serve as a more desirable
alternative to sheer deliberation.[96]

For decision-making by deliberative democracy, DTA is necessary, plausible
and feasible. It is necessary because a decision is still expected even if no universal
consensus is available after deliberation, which is, as discussed, perfectly possible.
At the same time, DTA is plausible for two reasons. First, the two approaches to
decision-making, i.e., aggregation and deliberation, are consistent with each other,
and have been widely regarded as complementary rather than contradictory (see Dahl
and Lindblom, 1953; Miller, 1992; Knight and Johnson, 1994; Dryzek and List,
2003). Second, deliberation before aggregation, as Goodin (2008) argues, is valuable
because it expands the range of possible options on the agenda. Lastly, DTA is also

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[96] A prominent voting or aggregation procedure for a DTA institution as such, which should be at least
in line with the democratic quality of deliberative democracy, is simple majority rule (see Cohen,
1989, p. 23).

feasible. As research into democratic innovations has shown, there are several institutional design options for DTA, including deliberative opinion polls, citizens' juries and initiatives/referendums, etc. (see Smith, 2001, 2003, 2009; see also Chapter 4).

In sum, institutionalising deliberative democracy in the form of DTA is both possible and desirable. Deliberation is distinguished from decision-making, and the function of decision-making is served by a post-deliberation aggregation mechanism. In this way, not only is the effect of path dependence reduced (a normative concern), but the availability of collective decisions is also ensured (a practical concern).

5.2   The normative ends of deliberation

If a DTA institution consists of deliberation and post-deliberation aggregation, then what should the former achieve before proceeding to the latter? Or, what should be the 'cut-off' point of deliberation? Theoretically, deliberation can last forever or until it terminates 'naturally' at a certain point, which may be due to the attainment of universal consensus on an agenda, to time constraints on deliberation or to voluntary dismissal of deliberation as agreed by the deliberators, etc.

For the purpose of institutional design, it is essential to spell out a generalisable and justifiable benchmark for identifying the cut-off point of deliberation. However, a benchmark set simply at the 'natural termination' of deliberation does not make much sense for institutional design across more than one type of agenda and under varying circumstances, since the point at which deliberation actually ends in such a 'natural' manner is highly context-dependent. More importantly, it is unrealistic, as discussed, to expect deliberation to deliver universal consensus all the time. If it is perfectly possible that no universal consensus can be achievable from deliberation, such a benchmark is necessary for a DTA institution. What can this benchmark be?

Dryzek (2000), in his earlier work on deliberative democracy, acknowledges that "in a pluralistic world, consensus is unattainable, unnecessary and undesirable", and that it is "more feasible and attractive [to expect from deliberation,] workable agreements in which participants agree on a course of action, but for different reasons" (p. 170). In Dryzek and Niemeyer (2006), drawing on List (2002b), this idea of 'workable agreements' is further developed as a 'meta-consensus' which can

serve as a basis for resolving the possible tension between pluralism and consensus in deliberation. In Dryzek and Niemeyer (2007), meta-consensus is recommended, alongside 'inter-subjective rationality', as a normative end of deliberation.

Meta-consensus is the 'meta' counterpart of consensus. In the context of deliberation, demanding meta-consensus means that it is sufficient for deliberation to produce "agreement about the nature of the issue at hand, not necessarily on the actual outcome" (Dryzek and Niemeyer, 2007, pp. 500, 502-506). Dryzek and Niemeyer (2006; see also 2007) distinguish between three kinds of meta-consensus, i.e., normative meta-consensus, epistemic meta-consensus and preference meta-consensus, which represent the 'meta' counterparts of normative, epistemic and preference consensus respectively.

Normative meta-consensus does not seek, as does normative consensus, "agreement regarding values driving the decision process" (Dryzek and Niemeyer, 2006, p. 638), but only "agreement on recognition of the legitimacy of a value" (p. 639). Similarly, epistemic meta-consensus does not seek, as in epistemic consensus, "agreement about how particular actions map onto values in cause and effect terms" (p. 638), but only "agreement on the credibility of disputed beliefs, and on their relevance to the norms that define the issue at hand" (p. 640). Likewise, preference meta-consensus does not seek "agreement about what should be done" (p. 638), but merely "agreement on the nature of disputed choices across alternatives" (p. 641).

Inter-subjective rationality refers to a deliberative form of rationality, in both individual and collective choice, underpinned by a formal link between two sets of elements, i.e., (1) values and beliefs and (2) preferences (Dryzek and Niemeyer, 2007, p. 506). To achieve inter-subjective rationality, "any pair of deliberators with similar subjective positions − in that they agree on values and beliefs − ought also to agree on preferences [while] conversely, if they disagree on values and beliefs, they are reasonably expected to disagree on actions" (p. 507). In other words, inter-subjective rationality demands that both individual opinions and collective decisions on values, beliefs and preferences should be consistent in order to meet the deliberative rationality requirement. Besides, if any two individual opinions on values and beliefs converge, these opinions should also converge on preferences.

An illustrative example

Let me further illustrate meta-consensus and inter-subjective rationality using the airport example. Suppose the group considers, through deliberation in the first instance, whether or not to campaign against the third runway proposal. There are reasoned discussions between the five members, in which all participate equally, and all their views are treated as equally admissible as long as they are consistent. Initially, individual opinions are diverse. While they disagree over the conclusion as to whether or not to campaign against the proposal, they also disagree over the supporting reasons. They hold different values about what normative standards they should use for assessment and possess different beliefs about whether the proposal satisfies or violates the above described normative standards. After some deliberation, however, their disagreements are narrowed. Although they disagree over both the conclusion and the supporting reasons, they agree, for the purpose of decision-making, to set up an agenda with the following propositions:

Proposition 1: We should campaign against any policy which causes severe noise pollution (*V*).

Proposition 2: The third runway proposal causes severe noise pollution (*B*).

Proposition 3: We should campaign against the third runway proposal (*C*).

Proposition 4: We should campaign against the third runway proposal if, and only if, we should campaign against any policy which causes severe noise pollution and the third runway proposal causes severe noise pollution, i.e., *C* if and only if (*V* and *B*).

In deciding whether or not to campaign against the third runway proposal, the group, in this instance, agrees on the issue dimension that it should consider as in *V*, *B* and *C* if and only if (*V* and *B*), i.e., noise pollution is severe. This means that the group will focus on this specific issue in subsequent decision-making instead of digging into other subjects such as the economic benefits, as argued by the aviation industry, or the benefits of any alternative proposals. This agreement on a single issue dimension for decision-making is one example of meta-consensus, or more precisely preference

meta-consensus, at least in the relatively informal sense defined by Dryzek and Niemeyer.

As for the contents of the noise pollution issue, *C* is a proposition of preference or choice which represents the conclusion on whether or not to campaign against the third runway proposal. *V* is a proposition of value involving a modal operator 'should', meaning that it is obligatory for the group to campaign against any policy which causes severe noise pollution. *B* is a proposition of belief whose truthfulness can be verified by being tested against empirical facts. Both *V* and *B* represent reasons for campaigning or not campaigning against the proposal.

Dryzek and Niemeyer (2007, p. 501; see also Dennett, 1971) further suggest that preferences or choices are a function of both values and beliefs. This means that *C* is related in some ways to *V* and *B*. According to inter-subjective rationality, any two individuals agreeing (and disagreeing) on *V* and *B* are expected to agree (and disagree respectively) on *C*. Consistently with inter-subjective rationality, the connection between *C* and (*V* and *B*) may be a form of material implication such as *C* if and only if (*V* and *B*). There could, of course, be other connections, but what matters from the perspective of inter-subjective rationality is that all individuals make the connection in the same way. The present agreement, on the consideration of four interconnected propositions, *V*, *B*, *C* if and only if (*V* and *B*), and *C*, is one example of meeting the demands of meta-consensus and inter-subjective rationality.

Suppose the five members of the group submit the following judgments on the four propositions (Table 5.1):

Member	*V*	*B*	*C* if and only if (*V* and *B*)	*C*
1	Yes	Yes	Yes	Yes
2	No	Yes	Yes	No
3	Yes	No	Yes	No
4	Yes	No	Yes	No
5	No	Yes	Yes	No

Table 5.1: Example of individual judgments on the four propositions

According to normative meta-consensus, any disputed values will be recognised as legitimate. In Table 5.1, Members 1, 3 and 4 disagree with Members 2 and 5 in such

a way that the former three accept *V* while the latter two reject *V*. No individual judgment on *V* is dismissed simply due to its divergence from those of other individuals, and thus normative meta-consensus is satisfied. Similarly, according to epistemic meta-consensus, any disputed beliefs will be accepted as credible. Although Members 1, 2 and 5 accept *B*, this does not rule out the opposing judgments of Members 3 and 4. We can therefore say that epistemic meta-consensus is also satisfied. Likewise, according to preference meta-consensus, individuals will agree on the nature of any disputed preferences or choices. Here, Member 1 accepts *C*, whilst the remaining four individuals reject *C*. However, since all five individuals agree that *C* is to be considered on the dimension of severity of noise pollution, preference meta-consensus is also satisfied.

At the same time, Members 3 and 4 accept *V*, reject *B*, accept [*C* if and only if (*V* and *B*)], and reject *C*. Both sets of judgments are logically consistent and both individuals agree on *C*, given that they agree also on *V* and *B*. This is an example where the first requirement of inter-subjective rationality is fulfilled – individuals who agree on values and beliefs *ought to* also agree on preferences or choices. As for the second requirement of inter-subjective rationality, individuals who disagree on both values and beliefs are *reasonably expected* to disagree on preferences or choices. As we can notice from Table 5.1, the judgments of Members 1 and 2 differ on *V*, in the sense that Member 1 accepts this whilst Member 2 rejects it. They both accept *B* and [*C* if and only if (*V* and *B*)], but Member 1 accepts *C*, whereas Member 2 rejects *C*. Since both individuals are not required to disagree on *both V* and *B* in such a way that they disagree on *C*, this is still consistent with the second requirement of inter-subjective rationality.

A more difficult case is the disagreement between (Members 2 and 5) and (Members 3 and 4) on both *V* and *B* while they all agree on *C*. At first sight, this may contradict the second requirement of inter-subjective rationality, but such a requirement, with the operator of 'reasonably expected' rather than 'ought', is not as strict as the first. We may, for instance, interpret the second requirement as meaning that individuals who disagree on values and beliefs should disagree on preferences or choices *only if* this does not violate any logical rules in standard propositional logic. Suppose Member 5 changes his/her mind and rejects *B*, and will thus disagree with Member 1 on both *V* and *B*. In this case, they should, according to inter-subjective rationality, disagree on *C*, since the resulting judgment sets are logically consistent.

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On the other hand, (Members 2 and 5) and (Members 3 and 4) do not have to disagree on *C* simply because they disagree on *V* and *B*, since doing otherwise will result in an inconsistent set of judgments. Thus, strictly speaking, the second requirement of inter-subjective rationality is not contravened.

Therefore, we can regard the sets of individual judgments in Table 5.1 as satisfying, or at least being consistent with, both meta-consensus and inter-subjective rationality. If, after some deliberation, the group reaches these sets of judgments, it is said to have achieved what Dryzek and Niemeyer take to be the two normative ends of deliberation. In DTA, meta-consensus and inter-subjective rationality may define the cut-off point of deliberation where deliberation terminates and is followed by aggregation for decision-making.

The merits of meta-consensus and inter-subjective rationality

In terms of the merits of these two normative ends, Dryzek and Niemeyer (2006/2007) contend that "… [meta-consensus and inter-subjective rationality] are consistent with ideal deliberative procedure" (2007, p. 497), and that they "produce collective outcomes that are more stable …" (2007, p. 508). Moreover, "even when disagreement can be solved only by voting, meta-consensus can facilitate the generation of better outcomes …" (2006, p. 642). We can infer two theses from their claims:

> **Normative thesis:** Meta-consensus and inter-subjective rationality (in Dryzek and Niemeyer's sense) are consistent with democratic equality, which is a necessary condition for an ideal deliberative procedure.

> **Positive thesis:** If meta-consensus and inter-subjective rationality are present, then a deliberative arrangement will generate (more) stable collective decisions according to an appropriate criterion of stability.

The first thesis is normative because it touches on the relationship between three normative concepts which specify a set of minimal conditions for a deliberative-democratic institution, such as DTA. The normative thesis can be evaluated for its theoretical plausibility. The second thesis, on the other hand, is positive, since it involves the issue of stability which can be examined empirically according to a particular measurement of stability. Notice that the positive thesis can be tested both

for its empirical adequacy and for its theoretical plausibility. Are the two theses correct? And what do these theses imply for the institutionalisation of deliberative democracy? I address both questions in the following sections.

5.3 The deliberative cut-off problem

I show, in this section, that the two theses are incorrect, drawing on the well-discussed problem of the discursive dilemma in social choice/judgment aggregation theory. I label this as the deliberative cut-off problem. Note that I discuss both theses in the context of a DTA institution.

A model of DTA

We should first model DTA in terms of meta-consensus, inter-subjective rationality and democratic equality. From Figure 5.1, for deliberative democracy serving as a decision-making procedure, there are input, output and responsiveness conditions. When deliberative democracy is institutionalised as DTA, it can be further split into the deliberation component and the aggregation component. The input condition for DTA specifies what types of inputs, in the form of individual opinions, should be accepted as admissible for deliberation in the first instance. The output condition for DTA specifies what kinds of collective decision outcomes, in the form of binary choices, preferences or judgments, should be produced after aggregation. The responsiveness condition for DTA specifies how the collective outcomes are generated from the individual opinions through deliberation and aggregation.

Following the requirements as demonstrated in Figure 5.1, all individual opinions are accepted as admissible as long as they are consistent, and collective outcomes should also at least be consistent. Democratic equality, broadly understood, refers to equality between individuals in determining collective decisions. Since, in DTA, there are both deliberation and aggregation components, these should be upheld in the responsiveness conditions for both components. The output condition for the deliberation component is subject to the normative ends of meta-consensus and inter-subjective rationality, so that individual choices, preferences or judgments should satisfy, or at least be consistent with, both meta-consensus and inter-

subjective rationality before being submitted to aggregation. At the same time, the input condition for the aggregation component should, similarly, accept only consistent individual choices, preferences or judgments as admissible. Figure 5.2 is a diagrammatic representation of DTA:
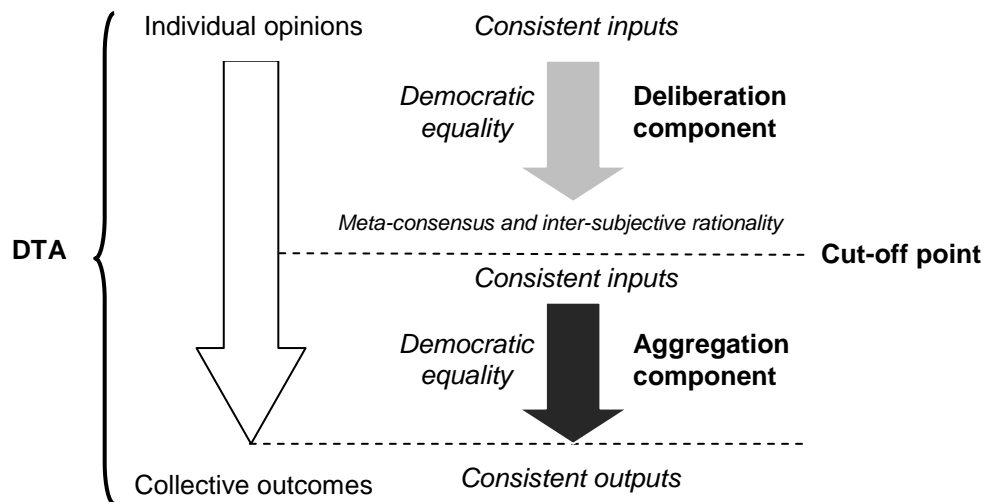
Figure 5.2: DTA institution

We may now formulate more precisely the necessary (if not sufficient) conditions for both the deliberation and aggregation components of DTA. First, the deliberation component should satisfy the following three minimal conditions:

>**(D1) Robustness to pluralism:** The deliberation procedure is able to function under pluralism, i.e., it accepts individual opinions as admissible, subject to the constraint of individual consistency.[97]

>**(D2) Deliberative equality:** The deliberation procedure enables individuals to participate equally throughout the process of deliberation and to influence equally the deliberative outcomes.[98]

>**(D3) Rational meta-consensus:** The deliberation procedure generates outputs which meet, or are at least consistent with, the requirements of meta-consensus and inter-subjective rationality as Dryzek and Niemeyer recommend.[99]

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[97] This mirrors the inclusiveness condition in Figure 5.1.
[98] This modifies slightly the equality condition in Figure 5.1.
[99] This modifies the rational consensus condition in Figure 5.1.

Second, the aggregation component should satisfy at least the following three conditions (List, 2011c):

(A1) Individual consistency: The aggregation procedure accepts individual post-deliberation choices, preferences or judgments as admissible, subject to the constraint of individual consistency.

(A2) Majoritarianism: The collective choices, preferences or judgments are the alternatives, orderings or propositions accepted by the majority of individuals.

(A3) Collective rationality: The aggregation procedure generates consistent collective choices, preferences or judgments.

Notice that the democratic equality requirement mirrored in (A2) is relatively basic and not necessarily sufficient. Democratic equality may require more than formal majoritarianism. However, majoritarianism certainly captures some key features of democratic equality, insofar as it implies anonymity (i.e., all individual opinions sharing equal weight) and consensus preservation (i.e., no alternative opinion overruling any universal consensus). In other words, (A2) upholds democratic equality by ruling out not only dictatorship (in the form of imposed rule), but also any bias in counting individual inputs. Furthermore, the conditions for both components are related: (A1), (A2) and (A3) are relevant to, and coherent with, (D1), (D2) and (D3) respectively.

The discursive dilemma (revisited)

The problem of the discursive dilemma originates from the doctrinal paradox in the area of jurisprudence (Kornhauser and Sager, 1986, 1993; Kornhauser, 1992; see also List, 2010 and the discussion in Chapter 2). This highlights an instance where a court with multiple judges is unable, using majority voting, to reach consistent judgments on some propositions connected by legal doctrine. In recent years, this problem has been further developed under the name of the discursive dilemma in the literatures of social choice theory, deliberative democracy and group agency (Pettit, 2001; List, 2006; List and Pettit, 2006, 2011).

Consider again the set of individual post-deliberation judgments in the airport example in Table 5.1. This is a conjunctive decision problem with V, B, and C if and only if (V and B) as premises and C as conclusion. From Table 5.2, all individual judgments are consistent and should be accepted as admissible (A1). By aggregating these sets of judgments using simple majority rule (A2), the group accepts V, B, and C if and only if (V and B), but rejects C. This results in an inconsistent collective judgment set, {V, B, C if and only if (V and B), not-C}, which violates (A3). This represents the discursive dilemma.

Member	V	B	C if and only if (V and B)	C
1	Yes	Yes	Yes	Yes
2	No	Yes	Yes	No
3	Yes	No	Yes	No
4	Yes	No	Yes	No
5	No	Yes	Yes	No
Majority	Yes	Yes	Yes	No

Table 5.2: Example of the discursive dilemma

The discursive dilemma shows that, for agendas with multiple propositions which are logically connected, the majority judgment of premises (e.g., V, B, and C if and only if (V and B)) *can* differ from the conclusion (e.g., C). Given that the sets of individual judgments, as in Table 5.2, are entirely possible deliberative outputs which satisfy (D3), this is a case which a DTA institution should seek to avoid in its design.[100]

Is there any other scenario that may encounter the discursive dilemma? Let us turn to the plastic bag example. Recall that the citizens' jury has to rank three proposals, i.e., to educate (P_E), to tax (P_T), and to ban (P_B), in order of preference. During deliberation, they consider the following propositions: whether educating is preferable to taxing ($P_E > P_T$), whether taxing is preferable to banning ($P_T > P_B$), and

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[100] It is true that individuals can revise their opinions / judgments following the end of deliberation and before aggregation, i.e., periodic updating as discussed in Section 5.1. However, there is no guarantee that individuals will *always* revise their judgments, so their judgments submitted for aggregation will not generate inconsistent collective outcomes under all circumstances. In this way, in designing DTA institutions, we need, in the first instance, to avoid any profile of individual judgments which may lead to the discursive dilemma.

whether educating is preferable to banning ($P_E > P_B$). Consider a possible profile of deliberative outputs for aggregation, as in Table 5.3. The individual judgments on the three propositions may be seen as premises, in the form of values and/or beliefs, for substantiating both their preference ordering of the three proposals and the conclusions. (D3) is achieved in the sense that the individuals all agree on a decision to be made on the basis of the three propositions in spite of their disputes over these.

Individual	$P_E > P_T$	$P_T > P_B$	$P_E > P_B$	(Ordering)
1	Yes	Yes	Yes	$P_E > P_T > P_B$
2	No	Yes	No	$P_T > P_B > P_E$
3	Yes	No	No	$P_B > P_E > P_T$
Majority	Yes	Yes	No	$P_E > P_T > P_B > P_E$

Table 5.3: Another example of the discursive dilemma

Individual 1 accepts $P_E > P_T$, $P_T > P_B$, and $P_E > P_B$, and his/her preference ordering can be deduced to be $P_E > P_T > P_B$, which is consistent relative to the constraint of transitivity. Likewise, the preference orderings of Individuals 2 and 3 are consistent for the same reason. What would happen if we tried to aggregate these individual judgments using a DTA institution? For (A1), all the individual judgment sets should be accepted as admissible. For (A2), the collective preference ordering of the group should be that supported by the majority. Since the majority judgments on $P_E > P_T$ and $P_T > P_B$ are in favour of acceptance, while that on $P_E > P_B$ is in favour of rejection, the collective preference ordering is $P_E > P_T > P_B > P_E$, which is a cycle. As transitivity is a necessary condition for consistency, $\{P_E > P_T > P_B > P_E\}$ is an inconsistent judgment set, which violates (A3). This is another example of the discursive dilemma.

From the plastic bag example, we can see that we may also encounter the discursive dilemma when aggregating preferences, as long as the profile of preferences as demonstrated is perfectly possible even after deliberation. This is, again, a scenario which a good DTA institution should seek to circumvent.

Can we say something more general about the discursive dilemma and the conditions for a DTA institution? What the two examples have in common is that the agenda concerned is more complex than a single binary issue such as deciding

between options *A* and *B*. The airport example involves a decision on four logically connected propositions, whilst the plastic bag example involves the ranking of three alternatives (expressed in the form of judgments). These agendas can be labeled as 'non-simple' agendas.[101]

List (2006) proves that no decision procedure can simultaneously meet the demands of pluralism, majoritarian responsiveness and integrity. Pluralism means that the decision procedure accepts all possible combinations of individual judgments as admissible in the agenda. Majoritarian responsiveness means that the collective judgment on each proposition in the agenda is the majority judgment on the same proposition. Integrity means that the collective judgments produced by the decision procedure are mutually consistent. These three demands can be mapped to the three conditions we have specified for a DTA institution, in which pluralism corresponds to (A1), majoritarian responsiveness corresponds to (A2) and integrity corresponds to (A3). From here, the problem of the discursive dilemma for a DTA institution can be generalised as follows:

> For a non-simple agenda, there exists no procedure in the aggregation component of the DTA which satisfies simultaneously the conditions of individual consistency (A1), majoritarianism (A2) and collective rationality (A3).

What does the finding above imply for the two theses which we examine in this section? In the deliberation component of a DTA institution, democratic equality, meta-consensus and inter-subjective rationality are upheld, as in (D2) and (D3). In its subsequent aggregation, any profiles of individual judgments, as long as these satisfy the requirements of meta-consensus and inter-subjective rationality, should be accepted as admissible, which satisfies (A1). However, as demonstrated, aggregating these judgments on the basis of (A2) may result in inconsistent collective outcomes, which contradicts (A3). Hence, we cannot claim more generally that democratic equality, meta-consensus and inter-subjective rationality in the deliberation

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[101] In more technical terms, a non-simple agenda includes at least two 'atomic' propositions plus at least one 'compound' proposition stipulating the logical connections between the 'atomic' propositions (List, 2006). For instance, *V*, *B*, and *C* are 'atomic' propositions, whereas *C* if and only if (*V* and *B*) is a 'compound' proposition. Similarly, $P_E > P_T$, $P_T > P_B$, $P_E > P_B$ and the preference ordering are 'atomic' propositions while the (implicit) 'compound' proposition is the transitivity constraint.

component are retainable in the aggregation component, due to the fact that (A1), (A2) and (A3) conflict with each other.

In this way, any DTA institution which attempts to meet the demands of democratic equality, meta-consensus and inter-subjective rationality simultaneously may produce inconsistent collective outcomes. Here, inconsistency arguably contributes to the instability of these outcomes, since it is unclear whether a particular outcome, or its negation, should serve as the binding collective decision. Therefore, we can dismiss the normative thesis as incorrect because meta-consensus and inter-subjective rationality (in Dryzek and Niemeyer's sense) are inconsistent with democratic equality, at least in the context of DTA, and in the presence of the other conditions I have introduced. This is due to the problem of the discursive dilemma to which meta-consensus and inter-subjective rationality pave the way. At the same time, we can assert that the positive thesis is incorrect without empirical verification, since it makes sense to believe that inconsistent collective outcomes are themselves unstable. This is the deliberative cut-off problem.

5.4   Two concepts of meta-level agreement

What lessons can we learn from our discussion above for the institutionalisation of deliberative democracy? We know that the normative thesis is incorrect, but what else can the two normative ends of deliberation, as proposed by Dryzek and Niemeyer, tell us about the institutional design of DTA?

Although the discursive dilemma illuminates the inconsistency between individual consistency (A1), majoritarianism (A2) and collective rationality (A3), this does not mean that collective outcomes can *never* be stable if the requirements of meta-consensus and inter-subjective rationality are satisfied. To ensure (a higher level of) stability of outcomes from a DTA institution, we must find ways to avoid the discursive dilemma, and this can be done by relaxing (A1), (A2) or (A3) in the aggregation component. In particular, by relaxing (A2), or democratic equality, one can secure meta-consensus as mirrored in (A1) and inter-subjective rationality as mirrored in (A3). Then, the DTA institution so constructed will reflect the normative ends of meta-consensus and inter-subjective rationality whilst keeping a distance

from the challenge of logical consistency as in the discursive dilemma. In other words, it is possible to rehabilitate the positive thesis by relaxing (A2).

There are at least two paths we can take to relaxing (A2), i.e., adopting dictatorship or adopting a premise-based procedure.[102] These two approaches are based on relaxing, respectively, the anonymity condition and the independence condition, as in the notion of majoritarianism. The anonymity condition requires that the decision procedure treat all individuals equally. The independence condition, on the other hand, demands that the collective judgment on each proposition depend only on individual judgments of the same proposition.

Consider Table 5.2 again. Suppose Member 1 is appointed as the dictator of the group. Then, the collective judgments on V, B, C if and only if (V and B), and C will follow immediately from those of Member 1, i.e., acceptance for all propositions. Thus, the collective judgment on C will be acceptance, which is consistent with the collective judgments on V, B, and C if and only if (V and B). However, this results in inequality between Member 1 and the remaining individuals, and hence in violation of the anonymity requirement.

Alternatively, the group can identify V, B, and C if and only if (V and B) as premises, take a majority vote on each of these premises, and then deduce conclusion C from the majority judgments on these premises. This means, however, that the independence condition is violated. The collective judgment on C no longer depends on the individual judgments on C, but the collective judgments on V, B, and C if and only if (V and B), i.e., acceptance, and the collective judgment set {V, B, C if and only if (V and B), C}, thus become logically consistent.

It is possible to design a DTA institution with meta-consensus and inter-subjective rationality by relaxing (A2), using either of the approaches. There is a price to pay, however. First, adopting dictatorship infringes the fundamental principle of democratic equality, i.e., treating all individual decision-makers as equals in terms of participation in decision-making as well as determination of decisions. This is inconsistent with the spirit not only of deliberative democracy, but also of democracy more broadly. Second, although the premise-based procedure is consistent with what deliberative democrats would value about the 'collectivization of reason' (Pettit, 2001; Chapman, 2002; see also the relevant discussions in

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[102] See also our discussions on eco-authoritarianism in Chapter 3 and on distributed cognition in Chapter 6.

Chapters 3 and 7), it is vulnerable to strategic manipulation (Dietrich and List, 2007). If individuals do not reveal their decisions truthfully after deliberation, strategic manipulation remains a risk (Dryzek and List, 2003).

Reformulating meta-consensus as an alternative

Given the relatively high cost associated with adopting dictatorship and the potential threat of manipulation in adopting the premise-based procedure, is there any better alternative? One possible answer is to further restrain the input condition of the aggregation component of DTA in such a way that any profile of post-deliberation outputs which may encounter the problem of the discursive dilemma is rejected in the first instance. This can be done by redefining the notion of meta-consensus in a more stringent manner, and ensuring that the inputs submitted for post-deliberation aggregation satisfy certain demands required for avoiding the discursive dilemma. The 'demands required' are hinted at by Riker (1982):

> "If, by reason of discussion, debate, civic education, and political socialization, voters have a common view of the political dimension (as evidenced by single-peakedness), then a transitive outcome is guaranteed." (p. 128)

The idea of single-peakedness was introduced by Black (1948). It represents a situation in which every individual in a group has one most-preferred option, and the options which are preferred less are located further from his/her most-preferred option. This single-peakedness condition assumes that an individual's preferences over different decision alternatives can be ranked by measuring the distances of these alternatives from his/her ideal alternative. The greater the distance from the ideal alternative, the lower the rank the alternative concerned is.[103] Black proves that if all individuals' preferences are single-peaked, then the corresponding majority preferences are transitive.

Recall that, in the plastic bag example, a consistency requirement for preference orderings is that these should be transitive, i.e., if $P_E > P_T$ and $P_T > P_B$, then it must follow that $P_E > P_B$. As we have seen, the discursive dilemma (in the generalised sense, applying to both judgments and preferences) occurs if, and only if,

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[103] This is also an assumption for the spatial model of politics or policy-making as in political science.

the collective preference ordering is cyclic, or intransitive. According to Riker, it is possible, through deliberation, for the three individuals to arrive at single-peaked preference orderings. If this is so, then the collective preference ordering will be transitive and the discursive dilemma will have been circumvented.

To illustrate, suppose that, after deliberation, Individual 3 changes his/her opinion and rejects $P_E > P_T$, and at the same time continues to reject $P_T > P_B$ and $P_E > P_B$. Now the preference ordering of Individual 3 becomes $P_B > P_T > P_E$, which is transitive. Suppose further that neither Individual 1 nor Individual 2 changes his/her opinion/judgments after deliberation. In other words, the preference orderings of Individuals 1 and 2 are still $P_E > P_T > P_B$ and $P_T > P_B > P_E$ respectively. We can then plot the preference orderings of the three individuals on a graph (Figure 5.3).

In Figure 5.3, the preference orderings of Individuals 1, 2 and 3 are all single-peaked. By aggregating the individual judgments on the three propositions (on preferences) using simple majority rule, the group collectively rejects $P_E > P_T$, accepts $P_T > P_B$, and rejects $P_E > P_B$. The resulting collective preference ordering is $P_T > P_B > P_E$, which is transitive, and the discursive dilemma is thus avoided.
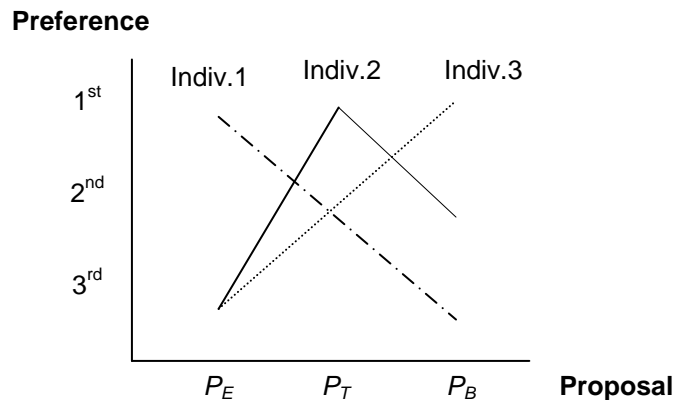
Figure 5.3: Example of single-peaked preference orderings

While Dryzek and Niemeyer (2006/2007) do not discuss the idea of single-peakedness in the context of the discursive dilemma, they acknowledge that single-peaked preference orderings represent one aspect of their notion of preference meta-consensus. They contend that:

> "Preference meta-consensus consists of agreement on the nature of disputed choices across alternatives and … [it] concerns the range of

alternatives considered acceptable … [D]eliberation itself could produce consensus on the range of acceptable alternatives … [Also], preference meta-consensus concerns the validity of different ways that choices across alternatives can be structured … [, though] single-peakedness is not the only type of structuration of choices." (2006, p. 641)

Dryzek and Niemeyer appear to agree with Riker that deliberation can generate consensus on how preferences for alternatives on an agenda are structured and that this structuration can be in the form of single-peaked preference orderings.

If we follow Dryzek and Niemeyer's preference meta-consensus in determining the cut-off point of deliberation, we can be sure that the profile of deliberative outputs for subsequent aggregation is single-peaked, which, once accepted for aggregation, guarantees transitive or consistent collective preference orderings. However, this is restricted to agendas which involve only the ranking of a set of options in order of preference.

To reiterate, for cases of judgment aggregation on other complex agendas, such as the airport example, Dryzek and Niemeyer (2007) acknowledge that preferences or choices are related to values and beliefs in the form of a function. This means that propositions of preferences or choices *can* be logically connected to propositions of values and beliefs in order to constitute an agenda for judgment aggregation. For example, Dryzek and Niemeyer would consider an agenda, as in the airport example, of *V*, *B*, *C* if and only if (*V* and *B*), and *C* (and their negations), as valid for decision-making. Nevertheless, by following their general notion of meta-consensus, it is possible to generate inputs for post-deliberation aggregation which will encounter the discursive dilemma, or the deliberative cut-off problem, as demonstrated earlier.

To avoid such difficulties, we can formulate a less general and more precise notion of meta-level agreement for stipulating what deliberation should achieve before proceeding to aggregation, or where the cut-off point of deliberation should be. This notion covers a wider range of agendas, including not only preferences but also judgments on multiple inter-connected propositions.

List (2002b) proposes a concept of 'meta-agreement'. In contrast with substantive agreement, meta-agreement does not require individuals to agree on the same preferences or judgments in decision-making, but only demands a certain level of agreement on preferences or judgments among the individuals. This notion is

similar to Dryzek and Niemeyer's meta-consensus, especially when contrasted with universal consensus. List (2002b) thinks that "the structure condition of single-peakedness may be seen as an implication of *agreement at a meta-level …*" (p. 77; his emphasis). This also captures the single-peakedness requirement, as in Dryzek and Niemeyer's notion of preference meta-consensus.

What makes meta-agreement distinctive from meta-consensus is that the former draws insights from Black's idea of single-peakedness and formulates a new structural condition for meta-level agreement for judgment aggregation. This structure condition is unidimensional alignment:

> "[If] there exists a single ordering of the individuals from "left"-most to "right"-most such that, for *every* proposition in the relevant domain of the issue, the individuals accepting that propositions are either all to the left, or all the right, of those rejecting it, …, then we say that the given profile of sets of judgments across individuals satisfies *unidimensional alignment* (List, 2002b, p. 77; his emphasis).

In other words, unidimensional alignment means that *all* individuals who hold the same judgment on a proposition, no matter it is acceptance or rejection, are structurally grouped either on the left or on the right. List (2003) proves that if a profile of judgments satisfies unidimensional alignment, then simple majority rule will produce consistent collective outcomes. When applied to the context of DTA, this means that if, after deliberation, the combination of inputs accepted as admissible by the aggregation component satisfies unidimensional alignment, then consistency is ensured in the corresponding collective judgments, and thus the discursive dilemma, or the deliberative cut-off problem, is avoided.

To illustrate the above, consider again the airport example. Suppose, after deliberation, Members 2 and 5 change their judgments on *B* from acceptance to rejection, whilst Members 3 and 4 change their judgments on *B* from rejection to acceptance. In this way, the judgments of Members 2 and 5 on *V*, *B*, *C* if and only if (*V* and *B*), and *C*, are respectively rejection, rejection, acceptance and rejection, while the judgments of Members 1, 3 and 4 on all propositions are acceptance. Suppose also that the judgments of Members 2 and 5 are both grouped on the left (or on the right), leaving the judgments of Members 1, 3 and 4 on the right (or on the left). Then, this profile of individual judgments is unidimensionally aligned and the

corresponding collective judgments obtained by simple majority rule are consistent (Table 5.4).

What lessons can we learn from this? As highlighted by the discursive dilemma, it is possible for a set of individual post-deliberation judgments to generate inconsistent collective judgments. To avoid the discursive dilemma, we must design the DTA institution in such a way that any set of individual judgments submitted for post-deliberation aggregation will exhibit a certain level of agreement or cohesion. In Section 5.3, we reveal that, by using Dryzek and Niemeyer's notions of meta-consensus and inter-subjective rationality in defining the cut-off point of deliberation in a DTA institution, we may encounter the problem of the discursive dilemma or the deliberative cut-off problem. In the present section, we notice that Dryzek and Niemeyer's notion of meta-consensus (or preference meta-consensus) constitutes the requirement of single-peakedness, such that post-deliberation individual preference orderings are accepted as admissible to the aggregation component if, and only if, they are structured in such a way as to guarantee transitive collective preference orderings after aggregation.

Proposition / Member	2	5	1	3	4	Majority
V	No	No	Yes	Yes	Yes	Yes
B	No	No	Yes	Yes	Yes	Yes
C if and only if (*V* and *B*)	Yes	Yes	Yes	Yes	Yes	Yes
C	No	No	Yes	Yes	Yes	Yes

Table 5.4: Example of unidimensionally aligned set of judgments

However, following Dryzek and Niemeyer's notion of meta-consensus does not rule out the possibility of the discursive dilemma if the agendas concerned involve not only ranking of alternatives in an order of preference, but also judgments on multiple interconnected propositions. For this reason, List's notion of meta-agreement is a more desirable alternative because it consists of both demands for single-peakedness (for preference aggregation) and unidimensional alignment (for judgment aggregation). If we use List's notion of meta-agreement to specify the cut-off point

of deliberation in a DTA institution, we can ensure consistent, and hence stable, collective outcomes across a wider range of agendas. Therefore, by adopting this alternative concept of meta-level agreement rather than Dryzek and Niemeyer's notion of meta-consensus, we can rehabilitate the positive thesis.
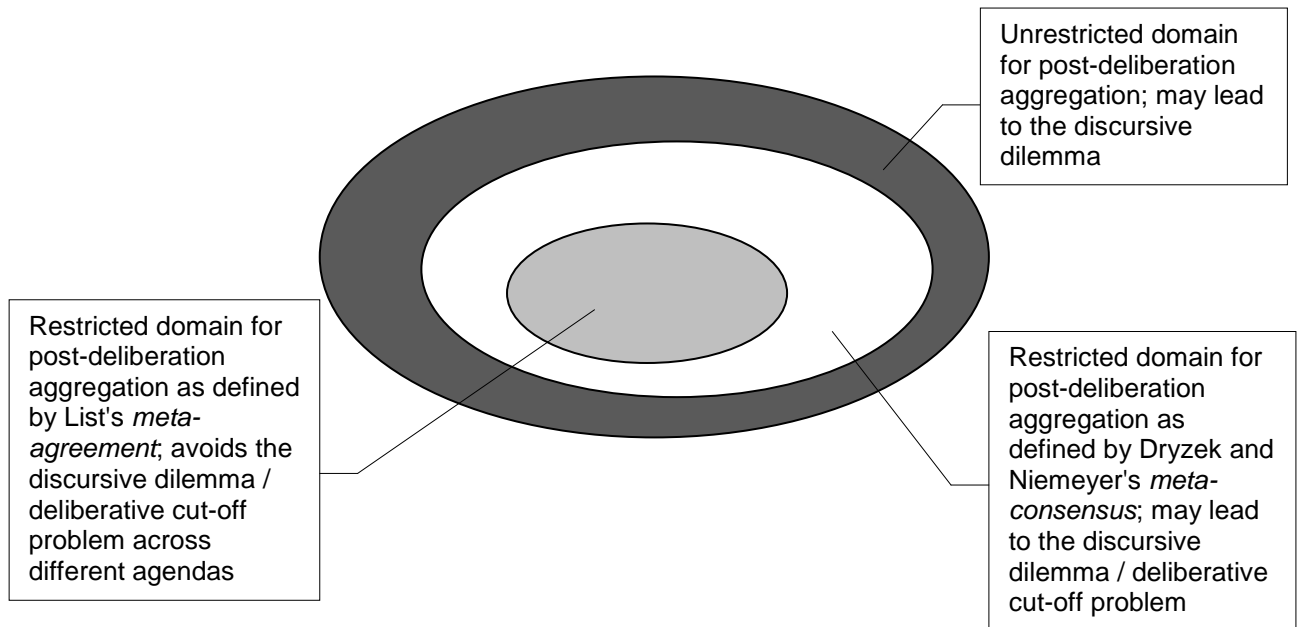
Figure 5.4: Domain of inputs without restrictions and domain restrictions as defined by meta-consensus and meta-agreement

Figure 5.4 summarises the difference between meta-consensus, meta-agreement and the case where neither of these is present in terms of the input domain of the aggregation component in DTA. The largest ellipse in dark grey represents the unrestricted domain with all logically possible inputs after deliberation. All these post-deliberation inputs are accepted as admissible to the subsequent aggregation procedure, which may lead to the discursive dilemma. The middle-sized ellipse in white represents the restricted domain according to Dryzek and Niemeyer's notion of meta-consensus. When these inputs are submitted for post-deliberation aggregation using simple majority rule, they may, depending on the type of agenda, still result in the discursive dilemma or the deliberative cut-off problem. This occurs for agendas with multiple interconnected propositions. Lastly, the smallest ellipse in light grey represents the domain restricted according to List's notion of meta-agreement, where the scope of domain restrictions is the largest. Whilst fewer inputs are accepted as admissible compared to the previous two cases, the discursive dilemma, or the

deliberative cut-off problem, will be avoided in post-deliberation aggregation by simple majority rule. This holds for different types of agenda, including those involving multiple interconnected propositions.

5.5 Conclusion

In this chapter, I have presented a critique of the two normative ends of deliberation proposed by Dryzek and Niemeyer (2006/2007), i.e., meta-consensus and inter-subjective rationality. I have discussed why 'deliberation-then-aggregation' (DTA) is a desirable institution for deliberative democracy. I have also illustrated how a DTA institution where the cut-off point of deliberation is defined by meta-consensus and inter-subjective rationality may encounter the discursive dilemma, which is also known as the deliberative cut-off problem. This explains why Dryzek and Niemeyer's theses that (1) meta-consensus and inter-subjective rationality are consistent with democratic equality (i.e., normative thesis), and (2) meta-consensus and inter-subjective rationality produce stable collective decisions (i.e., positive thesis) are incorrect in the context of DTA.

We can avoid the discursive dilemma, or the deliberative cut-off problem, by relaxing individual consistency (A1), majoritarianism (A2) or collective rationality (A3) in the aggregation component. One possible way to rehabilitate the positive thesis is to relax majoritarianism (A2). By following Dryzek and Niemeyer's notion of meta-consensus (or preference meta-consensus), we can restrict the domain of post-deliberation inputs in such a way that only individual preference orderings which meet the demand of single-peakedness are accepted as admissible for subsequent aggregation. However, their notion of meta-consensus does not consider the case of aggregation of judgments on multiple interconnected propositions. In light of this shortcoming, List's notion of meta-agreement, which consists of not only the demand of single-peakedness but also unidimensional alignment, is a more desirable alternative, and can be applied across different types of agenda in order to circumvent the discursive dilemma or deliberative cut-off problem.

The significance of this argument lies in the reasonable desideratum of designing a deliberative-democratic institution, no matter whether this is for environmental or other kinds of collective decision-making, in a way which can cater

for various types of decision agendas, including binary choices and preferences as well as judgments. It is, in particular, not uncommon for groups of individuals, as in the plastic bag and the airport examples above, to deliberate and decide on agendas which are more complex than simply a choice between two or more alternatives. Therefore, the benchmark we choose for determining the cut-off point of deliberation in a DTA institution should be capable of avoiding, at the very least, inconsistent collective outcomes after deliberation and aggregation regardless of the types of agendas. This depends crucially on the range of agendas which we expect the institution to process. Figure 5.5 depicts a simple decision tree which shows how such a benchmark can be determined.

It is clear that, unless we are designing a DTA institution which processes agendas limited to binary choices or preferences, List's notion of meta-agreement (together with Dryzek and Niemeyer's inter-subjective rationality) serves as a better benchmark than Dryzek and Niemeyer's meta-consensus (together with their inter-subjective rationality) for defining such a cut-off point of deliberation.

Is the DTA expected to process complex agendas (e.g., ranking of three or more alternatives and/or judgments on multiple interconnected propositions)?

No / *Yes*

No discursive dilemma; no domain restrictions required

Is the DTA expected to process agendas involving judgments on multiple interconnected propositions?

No / *Yes*

Domain restrictions, according to Dryzek and Niemeyer's meta-consensus, are sufficient for avoiding the discursive dilemma / deliberative cut-off problem

Domain restrictions, according to List's meta-agreement, are necessary for avoiding the discursive dilemma / deliberative cut-off problem
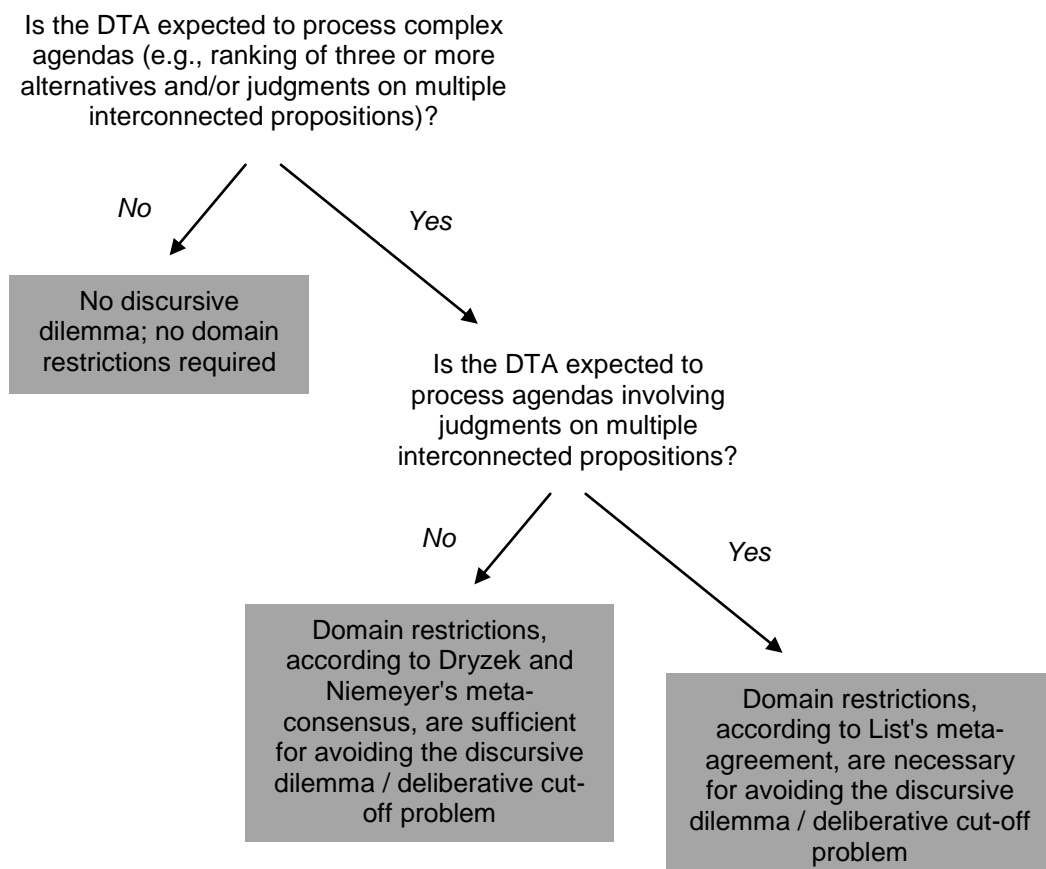
Figure 5.5: Simple decision tree for institutionalising DTA

CHAPTER 6

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DISTRIBUTED COGNITION AND THE RECONCILIATION OF TECHNOCRACY AND DEMOCRACY

In Chapter 5, I demonstrated that if we expect a deliberation-then-aggregation (DTA) institution to arrive at stable collective decisions, it is necessary to avoid the discursive dilemma in the aggregation component. This requires the deliberation component to terminate at an appropriate point such that the domain is restricted in order to exclude certain profiles of individual inputs for aggregation. I also argued that, if the agendas are non-simple[104], the cut-off point of deliberation should be determined by List's (2002b) meta-agreement in order to bypass the discursive dilemma. In other words, stable collective decisions are possible by relaxing the *input* condition of the aggregation component of DTA (which mirrors the robustness to pluralism condition discussed earlier).

Owing to certain practical limitations, however, such meta-agreement may not be achieved by deliberation. For example, individual opinions may be so deeply divided that not even any form of structural alignment of preferences or judgments is attainable via deliberation. To circumvent the discursive dilemma, we may, instead, focus on how the DTA institution processes the profiles of post-deliberation inputs as given. In this way, stable collective decisions are possible by adjusting the *responsiveness* condition of the aggregation component. As introduced in Chapter 5, the premise-based procedure is an example in which the majoritarianism condition is relaxed.

One mainstream debate about the methods of collective environmental decision-making is centred on a divide between technocracy and democracy, or the 'Technocratic-democratic Divide'. On the technocratic side, emphasis is placed on the correctness of environmental decisions with respect to certain criteria of the 'truth'. The high level of complexity and uncertainty of environmental issues

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[104] To reiterate, a non-simple agenda consists of multiple propositions which are logically connected.

provides an epistemic reason for decision-making being vested in specialist individuals with sufficiently high competence ('experts'). On the democratic side, emphasis is placed, instead, on the legitimacy of environmental decisions with respect to certain procedural considerations, such as inclusion, equality and rationality. The extensive coverage of the impact of environmental decisions provides a procedural reason for democratising decision-making by giving decision power to the general public ('ordinary people').

Can we reconcile the Technocratic-democratic Divide, and if so, how? In this chapter, I shall borrow an inter-disciplinary concept – distributed cognition – and demonstrate that such reconciliation is possible through relaxing the demand of majoritarianism. Recently, distributed cognition has been widely discussed in studies of computing, law, philosophy of science, psychology and sociology. Simply put, it means that the processes of forming certain representations of the world, such as beliefs and desires, are distributed across different agents or components (List, 2008). A phrase which roughly captures the essence of distributed cognition is 'cognitive division of labour', and through such a division of the constituent parts we can boost the overall performance of a system (e.g., the efficiency in an economy).

I shall argue that distributed cognition is relevant to political theory in terms of constructing institutions for collective (environmental) decision-making. More specifically, I shall show that it is possible to model a DTA institution for environmental decision-making as a 'distributed-cognitive' system, which I label Specialist Environmental Democracy (SED). This assigns decision power to individuals with different competences on different matters on an agenda. SED not only balances the two contending demands, i.e., procedural fairness and epistemic quality, but is also consistent with some normative desiderata for environmental decision-making. Following List's (2008) formal analysis of distributed cognition from the perspective of social choice theory, I shall discuss the normative application of this concept in resolving the tension between technocracy and democracy in a DTA institution in order to facilitate collective (environmental) decision-making.

My discussion is structured as follows. Section 6.1 introduces the ideas of distributed cognition and the Technocratic-democratic Divide. Then, drawing on two impossibility theorems in the theory of judgment aggregation, Section 6.2 demonstrates that some normative conditions for environmental decision-making may together lead to an anti-democratic result. I shall also explain how we can

determine a set of minimal benchmarks for SED without retrogressing this to a non-democratic procedure. Section 6.3 illustrates what options are available for fulfilling the above minimal benchmarks, formulating two models of SED based on distributed cognition. I shall argue that both models can balance epistemic performance as in technocracy with procedural fairness as in democracy. In resolving the Technocratic-democratic Divide, which model should be adopted depends on the relative importance of the two values. In Section 6.4, I shall make some concluding remarks.

6.1   Distributed cognition and the Technocratic-democratic Divide

Let us start by considering a hypothetical example.

> **The congestion charge example:** In the central district of a metropolitan area, the heavy traffic during weekday rush hours has been causing not only journey delays but also severe air pollution. Six council members are examining whether a congestion charge should be levied on every vehicle which enters the district. They would like collective decisions on both the above conclusion and its supporting reasons. After some deliberation, they reach a meta-agreement on the agenda consisting of three interconnected propositions on which they will make judgments:
>
> **Proposition 1:** The air pollution in the central district poses a health threat to pedestrians and to residents nearby (P).
>
> **Proposition 2:** If the air pollution in the central district poses a health threat to pedestrians and to residents nearby, then a congestion charge should be imposed (if P then C).
>
> **Proposition 3:** A congestion charge should be imposed (C).
>
> How should the group arrive at a collective decision in the form of judgments on these propositions?

As discussed in Chapter 5, if, after deliberation, there is no universal consensus on any of the above propositions on the agenda, it will be necessary to resort to aggregation for a collective decision. Suppose, immediately before aggregation, every member of the group formulates his/her attitudes which correspond to

judgments on all the propositions on the agenda, i.e., *P*, if *P* then *C*, and *C* (and their negations). These propositional attitudes are examples of *cognitions*. Suppose further that the collective decisions, understood as the propositional attitudes or cognitions of the group, are determined by putting together the propositional attitudes of all the group members; and the formation of the group's cognitions is carried out by having these *distributed* across different subgroups of members. This is an instance of distributed cognition (List, 2008).[105]

At the heart of distributed cognition, collaborations take place between different (human) agents and/or devices through cognitive division of labour. If a decision-making process is collaborative, it entails the absence of pre-assigned collective decisions or of any single individual dominating collective decisions. In other words, there is no imposed rule or dictatorship. In the congestion charge example, whether the three propositions on the agenda will be accepted or rejected depends on what the members submit as their judgments, and no judgment of a single member determines any collective judgment.

At the same time, if cognitive division of labour is involved, this means that no individual will determine the collective judgments on all propositions. Instead, different subgroups of individuals are assigned different propositions, and the collective judgment on a proposition depends on the judgments of the individuals who are assigned that proposition. For instance, Members 1 and 2 work on *P*, Members 3 and 4 on (if *P* then *C*), and Members 5 and 6 on *C*, etc., and simple majority rule is then applied in order to obtain the collective judgments on *P* from Members 1 and 2, and so on for (if *P* then *C*) and *C*. Figure 6.1 illustrates this diagrammatically.

The Technocratic-democratic Divide

How relevant is distributed cognition to environmental decision-making? Consider the congestion charge example. Suppose only Member 1 is an expert – environmental scientist and medical doctor – who knows how to measure the air quality in the district, estimates its corresponding health implications for pedestrians and residents, and recommends suitable actions. If he/she, on the grounds of

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[105] More broadly, a distributed-cognitive system can also involve non-human agents or devices as well as a mixture of both human and non-human agents/devices. See Giere (2002), Hutchins (1995) and Knorr Cetina (1999) for examples (cited by List, 2008).

competence, claims exclusive power in determining all three propositions on the agenda, the remaining five members will not be able to influence the collective decisions by submitting judgments on these propositions.

Group of individuals (e.g., M1, M2..., M6)

| Subgroup 1 (e.g., M1 & M2) | Subgroup 2 (e.g., M3 & M4) | Subgroup 3 (e.g., M5 & M6) | ..... | Subgroup n |

| Cognition 1 (e.g., P) | Cognition 2 (e.g., if P then C) | Cognition 3 (e.g., C) | ..... | Cognition n |

Collective decisions on all cognitions
(e.g., P, if P then C, & C)
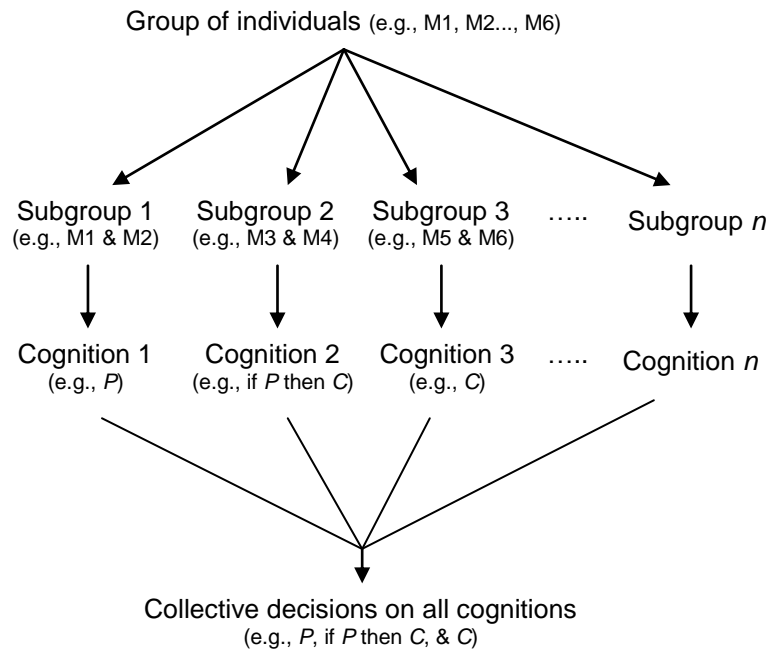
Figure 6.1: Example of distributed cognition in collective decision-making

In the above case, Member 1 becomes a dictator because he/she is more likely to, or the only one who can, make the correct decisions. This is an example of technocratic decision-making which prioritises the judgmental power of experts and professionals. It is a common discourse in environmental problem-solving – 'administrative rationalism' – which is manifested through institutions and practices like resource-management bureaucracies and environmental impact assessments (Dryzek, 2005). Analogously, these technocratic institutions/practices are represented by the situation when Member 1 dominates decision-making on the basis of superior knowledge and expertise on the issues/propositions concerned.

In environmental decision-making, the epistemic quality of decisions is often emphasised owing to the high level of complexity and uncertainties of the environment. Ophuls (1977), for example, advocates a notion of 'priesthood of responsible technologists' which states that only a governing elite of politicians, scientists and professionals, such as systems modellers, population biologists and ecologists, can master the depth and scope of knowledge which is sufficient for

dealing with complex ecological matters (see also Dryzek, 2005). Sunstein (2002) endorses, similarly, the relatively superior status of experts by comparing how experts and ordinary people deal with issues (including environmental issues) bearing the concerns of risk and safety:

"… [E]xperts have more information and are also prepared to look at the benefits as well as the risks associated with controversial products and activities. Ordinary people often make judgments on the basis of a quick, intuitive assessment, in which affect plays a large role … Of course experts make mistakes, and they may even be biased, … [b]ut precisely because they are experts, they are more likely to be right than ordinary people." (p. 77)

If Ophuls and Sunstein are correct in the sense that experts are more competent than ordinary people, and if correct decisions are crucial to environmental decision-making, then eco-technocracy in such decision-making is *prima facie* justifiable (see discussion of eco-technocracy in Chapters 1 and 3).

Nevertheless, the epistemic quality of decisions is, arguably, not the only desideratum in environmental decision-making. As discussed in earlier chapters, some procedural qualities are also necessary to a decision mechanism, such as inclusiveness of different opinions and equality of participation and decision power among people. This is often grounded in the extensive coverage of environmental impacts, and hence the need to represent the interests of parties that are affected but nonetheless (naturally) excluded from the decision-making process, such as future generations of humans (e.g., Dobson, 1996; Dryzek, 2000; Eckersley, 2000; Goodin, 2003). This can be referred to as 'democratic pragmatism' (Dryzek, 2005).

In contrast with administrative rationalism, democratic pragmatism, or more simply democracy, stresses the interactions in the process rather than the accuracy of the outcomes. It sees collective decisions not as products of experts and professionals, but as resulting from forces arising from citizens in society (Anderson, 1995; Dryzek, 2005). In other words, even if Member 1 is truly more competent than the five other members, democracy requires that Member 1 is not granted more judgment power on any of the three propositions. Instead, the opinions of all six members will be equally accepted as admissible and given equal weight.

Apart from procedural concerns, an epistemic reason for prioritising democracy over technocracy lies in "the impossibility of incontrovertible proof of anything" (Saward, 1993, p. 76). In this view, no individuals, including experts, can ever be certain of what counts as objectively right or wrong, and the best that any environmental decision-making institution can deliver is provisional decisions only. These provisional decisions, which are expected to be challenged and reassessed on a regular basis, can only be a result of an open democratic process rather than of closed technocracy (Dobson, 2007).

Another reason against technocracy concerns the fallibility of humans in terms of our imaginations and calculating abilities (Fearon, 1998; see also Torgerson, 1999; Smith, 2001). By this account, while experts may be more likely than ordinary people to accurately identify right decisions, as humans they are still fallible, i.e., their competence is less than certain. Whenever experts are wrong, technocracy, as a closed process of decision-making, produces wrong decisions which cannot be rectified (Beck, 1992; Barry, 1999; Dobson, 2007).

At the same time, it is claimed, contrary to Sunstein's assertion, that ordinary people, while also fallible, can be more competent than experts in assessing risk. For instance, Slovic (2000) contends that ordinary people display a qualitative rather than (merely) a quantitative mind set, and hence their "basic conceptualization of risk is much richer than that of experts and reflects legitimate concerns that are typically omitted from expert risk assessments" (p. 238; cited in Sunstein, 2002, pp. 58-59). In other words, ordinary people are more capable than experts of making use of (lay) knowledge to reach correct decisions (see also Wynne, 1989; Jasanoff, 2006; Kusch, 2007). *If* this is true, *then*, even from an epistemic point of view, technocracy may not perform any better than democracy.[106]

The tension between technocracy and democracy, as approaches to collective environmental decision-making, can be summarised as follows. While technocracy is criticised as generating collective decisions without fair treatment of inputs from ordinary people, it also leaves something to be desired from an epistemic perspective. The complex and uncertain nature of environmental issues may, instead, support a

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[106] Undoubtedly, all these arguments in favour of either technocracy or democracy are worth more detailed discussion. This is, however, beyond the scope of this thesis. These arguments are, instead, briefly stated here to highlight the theoretical background of the controversies over technocracy and democracy. I aim at only spelling out, from these arguments, the Technocratic-democratic Divide as below, but *not* evaluating the soundness of each of these arguments (although the latter is arguably valuable for research in substantive environmental thoughts).

Popperian view that no single individual, not even an expert, can possibly know enough, not to mention the fact that he/she is fallible (Dryzek, 2005). Excluding the wisdom of the crowd, then, may hamper epistemic performance. On the other hand, although experts may not possess absolute epistemic superiority, it is far from clear whether ordinary people are in any sense more capable of arriving at correct decisions. In principle, decentralising decision power by assigning it to ordinary people can sacrifice any correct decisions identifiable by experts in favour of those preferred by the majority. This motivates us to reflect on the possibility of reconciling what I call the Technocratic-democratic Divide. Table 6.1 summarises the differences between technocracy and democracy for collective environmental decision-making.

	Technocracy	Democracy
Decision-makers	Experts	Ordinary people
Issue stressed	Complexity and uncertainties of environmental issues	Extensive coverage of environmental impacts
Value prioritised	Epistemic performance	Procedural fairness

Table 6.1: Comparison of technocracy and democracy as approaches to collective environmental decision-making

Below I suggest that distributed cognition illuminates insights into reconciling the Technocratic-democratic Divide in environmental decision-making. In particular, I demonstrate that, by adopting a procedure which distributes propositions on an agenda to different individuals, including so-called experts and ordinary people, the aggregation component of the DTA can balance the demands of procedural fairness and epistemic performance. I focus on the aggregation component because the final collective decisions are a crucial determinant of the epistemic performance of the DTA institution as a whole. This distributed-cognitive procedure, or Specialist Environmental Democracy (SED), can take two forms, and which of these is to be used depends on circumstances.

6.2   Constraints of Specialist Environmental Democracy

It is important to highlight two assumptions of SED. First, it considers decision scenarios with aggregation of binary judgments, i.e., either acceptance or rejection, on agendas consisting of multiple interconnected propositions, or non-simple agendas. [107] Second, which individuals in a group are 'experts' and which are 'ordinary people' is exogenously determined case by case. This means that the same individual can be an expert in one case, but one of the ordinary people in another, depending on his/her competence in judging the propositions on the agenda concerned. This makes good sense – a person, for example, may be 'ordinary' on global warming, while he/she can be an expert when it comes to dealing with local pollution problems which he/she experiences on a day-to-day basis.

In Chapter 5, we discussed the discursive dilemma which reveals a paradox of majoritarian aggregation on non-simple agendas. In the recent literature on judgment aggregation, the discursive dilemma has been further generalised in impossibility theorems which illuminate essential trade-offs of democratic aggregation (List and Pettit, 2002; Dietrich and List, 2007). In this section, I shall suggest that these theorems have significant implications for designing SED. In particular, on the basis of two impossibility theorems, I shall show that it is logically impossible to simultaneously satisfy several conditions which are all appealing for collective environmental decision-making. It is necessary, therefore, to relax at least one of these conditions. This serves as a basic principle for constructing SED.

Desiderata for SED

To reiterate, SED is designed to reconcile the Technocratic-democratic Divide. In order to search for suitable proposals for such reconciliation, we may start by considering the 'value prioritised' parameter as in Table 6.1. Broadly speaking, technocracy prioritises epistemic performance, while democracy prioritises procedural fairness. In one interpretation, technocracy requires that SED is more likely to produce correct than incorrect decisions, whereas democracy demands, minimally, that SED does not take the form of dictatorship and does not overrule any unanimously accepted collective judgments.

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[107] The aggregation of non-binary judgments on propositions which concern subjective probability assignments to these propositions is beyond the scope of our discussion.

We can now formulate three minimal benchmarks of SED which should not be compromised:

(E) Epistemic quality: It is more likely that collective decisions on the agenda are correct than incorrect.

(P1a) Consensus preservation: A proposition on the agenda is accepted if it is accepted by all individuals in the group.

(P1b) Non-dictatorship: There exists no single individual such that the collective judgments on all propositions on the agenda are solely determined by that individual.

(E) is an epistemic desideratum, whereas (P1a) and (P1b) are procedural desiderata. Notice that (E) makes sense from both the technocratic and the democratic perspectives. Even in democratic decision-making, we generally value correct decisions more than incorrect decisions, given that the corresponding truth is accessible.[108] This is also in line with the defence of (deliberative) democracy, from the green perspective, as an open process which stresses the importance of eliminating decisional errors and defects through public participation (Dobson, 1996, 2007; Barry, 1999; Dryzek, 2005). Besides, in social choice theory, there is also the celebrated Condorcet jury theorem which endorses the truth-tracking power of simple majority rule upon fulfilling certain conditions (see Chapter 4).[109] In principle, therefore, democracy is compatible with epistemic performance, and it is reasonable to expect SED to satisfy (E) even on democratic grounds.

Then, what other procedural desiderata, in addition to (P1a) and (P1b), may we expect SED to satisfy? For democracy as an aggregation procedure, there are certain generic requirements concerning its input, responsiveness and output conditions, such as robustness to pluralism, majoritarianism and collective rationality respectively. The first and the last desiderata can be formulated as follows:

(P2) Robustness to pluralism: The individual judgments on all propositions on the agenda are accepted as admissible for decision-making if, and only if, they are consistent and complete.[110]

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[108] This is regardless of whether the realist assumption of the truth existing as independent facts holds.
[109] The epistemic justification by Condorcet's jury theorem will be discussed in Chapter 7.
[110] This modifies slightly the individual consistency condition (A1) in Chapter 5.

(P3) Collective rationality: The collective judgments on all propositions on the agenda are consistent and complete.[111]

(P2) is a reasonable condition given the existence of pluralistic values concerning the environment. Since these values are incommensurable and incompatible, they may not be reduced to one single value and may not be dismissed before decision-making on the basis of any objective measurement of 'rightness' or 'goodness' (Brennan, 1992; O'Neill, 1997; Smith, 2003; see Chapter 2). This is also consistent with the commitment of environmental democracy to diversity and inclusiveness (Dryzek, 2000; Goodin, 2003; Ball, 2006). The consistency and completeness requirement is minimal, which rules out only logically invalid and fragmentary individual judgments. A set of individual judgments is complete if it contains either acceptance or rejection of every proposition on the agenda.

(P3) consists of the consistency and completeness demand for collective judgments. This is particularly important for environmental issues owing to the rise of 'new constituencies' such as citizens in other countries, future generations and non-human entities that are affected but are unable to participate in the relevant decision-making (Dobson, 2007; Goodin, 1996; Eckersley, 2004). A rational collective decision, with collective judgments on both the conclusion and its supporting reason(s), makes it possible for the group as a whole to justify decisions to the excluded constituencies as well as to other parties who may respond to, discuss and/or challenge these decisions. This ensures that groups are conversable and contestable with collective reasons (Pettit, 2001).[112]

Two impossibility results

Can SED satisfy (P2), (P3) and majoritarianism at the same time? The discursive dilemma, as illustrated in Chapter 5, shows the impossibility of this, given that the agenda is non-simple, i.e., it consists of multiple interconnected propositions. In the congestion charge example, the agenda is P, if P then C, and C (and their negations), which are logically connected. Table 6.2 shows a possible profile of individual

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[111] This modifies slightly the collective rationality condition (A3) in Chapter 5.
[112] To reiterate, a group is conversable if its collective decisions can be justified by reasons which are collectively accepted (see Chapter 2).

judgments. We notice that (P3) is violated when (P2) and majoritarianism are both satisfied, which represents, once again, the discursive dilemma.

Majoritarianism, to reiterate, means that majority acceptance of each proposition is a necessary and sufficient condition for the same proposition to be collectively accepted.[113] It is satisfied only if consensus preservation (P1a) plus the following conditions are satisfied:

(P1c) Anonymity: All individual inputs are treated equally.

(P1d) Systematicity: All propositions are treated equally (i.e., neutrality), and the collective judgment on each proposition depends on the individual judgments of the same proposition (i.e., independence).

Member	*P*	if *P* then *C*	*C*
1	Yes	Yes	Yes
2	Yes	Yes	Yes
3	No	Yes	No
4	Yes	No	No
5	Yes	No	No
6	No	Yes	No
Majority	Yes	Yes	No

Table 6.2: Example of the discursive dilemma

In other words, (P1a), (P1c) and (P1d) are all required for majoritarianism. The problem of majoritarian inconsistency as highlighted in the discursive dilemma can be further generalised in different impossibility results of judgment aggregation. List and Pettit (2002) prove that, for non-simple agendas comprising at least two atomic propositions (e.g., *P* and *C*) and at least one compound proposition (e.g., if *P* then *C*), there exists no aggregation function satisfying universal domain (or robustness to pluralism) (P2), collective rationality (P3), anonymity (P1c) and systematicity (P1d). In other words, the paradox of judgment aggregation is not restricted to simple majority rule but, more generally, applies to any aggregation procedure which attempts to meet the above four conditions, given a non-simple agenda.

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[113] It is worth noting that the majoritarianism condition can also be weakened to its basic form which states that majority acceptance of a proposition is only a necessary condition for the collective acceptance of that proposition. See List (2011b).

Based on List's and Pettit's result, Dietrich and List (2007) further prove the following theorem:

Anti-democratic result: If the agenda is non-trivially connected, any aggregation function which satisfies universal domain, collective rationality and systematicity is a dictatorship or inverse dictatorship of one individual (Dietrich and List, 2007).[114]

What do both impossibility results have to do with determining the procedural constraints of SED? To recall, dictatorship (P1b) must at least be avoided. If we are faced, in environmental decision-making, with a non-trivially connected agenda such as that in the congestion charge example, then it is impossible to construct an aggregation procedure of SED satisfying universal domain (or robustness to pluralism) (P2), collective rationality (P3), non-dictatorship (P1b) and systematicity (P1d). Therefore, to make such SED possible, we must avoid the anti-democratic result by relaxing (P2), (P3) or (P1d).

Escape routes

The first exit route is to relax robustness to pluralism (P2). This, as discussed in Chapter 5, can be done by persuading certain individuals to change their judgments on certain propositions so that the profile of individual judgments is aligned in a way which avoids the discursive dilemma. The persuasion can take the form of deliberation, and the revised matrix of individual judgments is regarded as a deliberation-induced agreement (Dryzek and List, 2003; Dryzek and Niemeyer, 2006). Although deliberation is generally democratic, which will also be acceptable to environmental deliberative democrats (e.g. Barry, 1999; Dryzek, 2000; Eckersley, 2004), there is no guarantee that the resulting matrix can *always* circumvent the discursive dilemma.

The second exit route is to relax collective rationality (P3). Arguably, there is little ground for the group to give up consistency of judgments between propositions. To implement this proposal without compromising consistency, the group may

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[114] An agenda is non-trivially connected if (1) it has an inconsistent set of size greater than two, with all its proper subsets being consistent; and (2) it is not structurally equal to a set of propositions with trivial logical connectives, i.e., 'not' and 'if and only if'. The agenda in the congestion charge example fulfils both conditions. See Dietrich and List (2007) and List (2011d, footnote 9).

abstain from judgment on any proposition whenever the individual judgments on that proposition are not all the same. This mirrors the unanimity rule. However, it often results in leaving the issues on the agenda undecided, which hampers the efficiency of decision-making. For example, in the congestion charge example, applying the unanimity rule will lead to no collective judgment on any single proposition (Table 6.2). Unless for some ideal conception of deliberative democracy which seeks universal consensus (e.g. Elster, 1986), this approach is not generally appealing.[115]

Another way to relax collective rationality is to adopt a conclusion-based procedure. This means that the collective judgment on the conclusion (as designated) is obtained by aggregating the individual judgments on that conclusion only, without considering the remaining propositions on the agenda, i.e., the premises. For example, from Table 6.2, the collective judgment on C is obtained by aggregating the individual judgments on C, and no collective judgments are made on either P or (if P then C). In other words, the group will not arrive at any supporting reasons for C at the collective level. This can be a problem for environmental decision-making, since groups will no longer be conversable, and their decisions can hardly be contested by any other parties (on behalf of the excluded constituencies, e.g., future generations). This result is probably unacceptable to most environmental theorists.

The last exit route is to relax systematicity (P1d). This can be done by dropping the independence condition. In this way, the collective judgment on some propositions may depend on the individual judgments on various other propositions. Environmental theorists, particularly deliberative theorists, may accept this exit route on the grounds of collectivisation of reasons, where there are judgments on the supporting reasons for a conclusion at the collective level (Pettit, 2001). There are at least two possible designs for the corresponding aggregation procedure:[116]

> **(1) Premise-based procedure:** The collective judgment on the conclusion, as designated, is obtained by aggregating only the individual judgments on the corresponding premises, i.e., the remaining propositions on the agenda. For instance, from Table 6.2, the collective

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[115] See also the discussion on the epistemic performance of deliberative democracy in Chapter 7. Another alternative is supermajority rule with a sufficiently large supermajority threshold. See List and Pettit (2002). It still runs the risk of leaving certain propositions undecided but the chance of such is not as high as that of the unanimity rule.

[116] Another example of an aggregation procedure violating independence is a distance-based procedure. See Pigozzi (2006) and Miller and Osherson (2009).

judgment on *C* is obtained by aggregating the individual judgments on *P* and (if *P* then *C*).

(2) Sequential priority procedure: All propositions on the agenda are ranked in an order of priority which specifies the order in which propositions are to be considered by the group. For each proposition considered, the collective judgment on that proposition is obtained by aggregating the individual judgments on the same proposition, unless that proposition is logically constrained by earlier judgments (List, 2004). In the latter case, the collective judgment on that proposition is derived from those earlier judgments.

For example, from Table 6.2, suppose *P*, (if *P* then *C*) and *C* are designated as the first, second and third propositions respectively. Then, using simple majority rule, *P* and (if *P* then *C*) are accepted by the group, whereas *C*, instead of being rejected, follows the earlier collective judgments of *P* and (if *P* then *C*) and hence deduced as accepted by group. The sequential priority procedure is a generalisation of the premise-based procedure.

Distributed cognition can be realised in both the premise-based procedure and the sequential priority procedure. In the former case, the premises are assigned to different individuals in the group for decision-making, regarded as the distributed premise-based procedure (List, 2008). In the latter case, all propositions, instead of merely the premises, are distributed across the individuals in the group, regarded as the distributed sequential priority procedure.[117]

With the distributed premise-based procedure, it is possible to achieve formal equality of judgmental power among individuals by assigning an equal number of proposition(s) to every individual. For example, each of the six members in the congestion charge example is allocated one proposition to judge on, say, Members 1, 2 and 3 on *P* and Members 4, 5 and 6 on (if *P* then *C*). On the other hand, with the

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[117] The premise-based procedure and the sequential priority procedure both violate the independence condition of systematicity (P1d), and for this reason, both decision procedures are not strategy-proof. In other words, it is possible for individuals to manipulate collective judgments by expressing *untruthful* individual judgments. For more discussion, see Dietrich and List (2007). This is the potential price we have to pay for adopting either procedure, as individuals sometimes do exhibit strategic behaviour in voting and other decision-making. The discussion of strategic manipulation is, however, outside the scope of this thesis. My focus here is to show that, the idea of distributed cognition *can* be realised in the design of democratic institutions, as the premise-based procedure and the sequential priority procedure.

distributed sequential priority procedure, members who are assigned sequentially prior propositions possess more judgmental power than members assigned sequentially later propositions. This is because individual judgments on the prior propositions can constrain those of the latter on the basis of logic.

For instance, consider again the cognitive division of labour in Figure 6.1, with the order of priority P > (if P then C) > C. *If* Members 1 and 2 both accept P and Members 3 and 4 both accept (if P then C), *then* it is a logical requirement that Members 5 and 6 accept C regardless of the actual judgments of Members 5 and 6. In this way, Members 5 and 6 have less judgmental power as their judgments may be overruled. Both procedures are models of SED, and are, as we shall see below, workable proposals for reconciling the Technocratic-democratic Divide.

The lesson learnt so far is that the anti-democratic result, on the basis of earlier works on the paradox of judgment aggregation, highlights the procedural constraints or trade-offs of constructing the aggregation procedure of SED. In order to satisfy the minimal benchmarks of non-dictatorship and consensus preservation, it is necessary to relax one of the three desiderata, i.e., robustness to pluralism, collective rationality or systematicity. Relaxing systematicity, or the independence condition, is a possible exit route, and the distributed premise-based procedure and the distributed sequential priority procedure represent two examples of how distributed cognition may be realised in this manner.

6.3   Epistemic performance of Specialist Environmental Democracy and the reconciliation of the Technocratic-democratic Divide

In the previous section, I introduced the procedural constraints of SED. These constraints are based on two procedural benchmarks, i.e., non-dictatorship and consensus preservation, serving as the minimal requirements of democracy. As for the minimal requirement of technocracy, the corresponding benchmark is epistemic quality (E). As a basic principle, the Technocratic-democratic Divide may not be reconciled in a way which violates either the procedural or the epistemic benchmark. How can SED satisfy benchmark (E)?

An aggregation procedure is said to perform well, in an epistemic sense, if it is good at generating collective judgments that track the truth. In particular, the truth

refers to a fact regarding the best decision output, where this piece of fact is independent of the aggregation procedure. Tracking the truth means that a certain judgment on a proposition, *x*, is chosen by the procedure if, and only if, *x* is correct (Nozick, 1981; see Chapters 4 and 7).

Consider again the congestion charge example with the six members judging whether or not to accept *P*. According to standard propositional logic, there are two possible states of the world: (1) either *P* (i.e., the air pollution in the central district poses a health threat to pedestrians and to residents nearby) or not-*P* (i.e., it is not true that the air pollution in the central district poses a health threat to pedestrians and to residents nearby). The aggregation procedure is regarded as truth-tracking on the state of the world if it satisfies the following two criteria:

Criterion 1: It accepts *P*, or judges *P* to be true, if, and only if, *P* is true.

Criterion 2: It rejects *P*, or judges *P* to be false, if, and only if, *P* is false.

When would we say an aggregation procedure is good in this epistemic sense? There appears to be no guarantee that a procedure must be able to arrive at correct collective judgments *all the time*, since this always depends on how far the individual judgments correspond to the truth. Nevertheless, it may be sufficient to say that an aggregation procedure is good in this epistemic sense if its probability of generating collective judgment on a proposition is high, or higher than that of its counterparts.

In what ways can SED track the truth, or satisfy benchmark (E)? How can we formulate proposals for reconciling the Technocratic-democratic Divide? Below, I examine the epistemic performances of the distributed premise-based procedure and the distributed sequential priority procedure in three possible cases.

First possibility: Absence of the 'expert-ordinary people' distinction

> **Case 6.1:** All individuals in the group (with an odd number in total) make their judgments on all propositions on the agenda independently and truthfully, and they have the same competence, *p*, in making a correct judgment on every proposition on the agenda. Each individual is more likely to be correct than incorrect in their own judgments, i.e., the value of *p* is between 0.5 and 1.

Case 6.1 describes a situation in which there exists no individual who is either more or less competent than others in making a judgment on any proposition on the agenda. In other words, among these individuals there is no distinction between the so-called experts and ordinary people as in the Technocratic-democratic Divide. From another angle, they may all be regarded as experts to a certain extent, since they tend to judge all the propositions correctly. This can happen to any (odd-number) combination of individuals in the congestion charge example when, say, they are equally capable of collecting a wide range of evidence and reasoning with sound arguments before submitting judgments on P and (if P then C), but none of them is superior in terms of knowledge in the fields involved in both propositions.

Suppose Member 1 temporarily abstains from decision-making so that the size of the group is reduced to five, i.e., an odd number. Suppose further that the individual competences in judging P and (if P then C) are 0.6 and 0.55 respectively, meaning that each of the five members shares the same probability of 0.6 of judging P correctly and of 0.55 of judging (if P then C) correctly.

Consider the following three aggregation procedures with simple majority rule: (1) standard premise-based procedure; (2) distributed premise-based procedure; and (3) distributed sequential priority procedure with the order of priority P > (if P then C) > C. For (1), all members submit their judgments on both P and (if P then C). For (2), some members focus on P and some on (if P then C), e.g., 2, 3 and 4 on P, whilst 4, 5 and 6 on (if P then C). For (3), some members focus on P, some on (if P then C), and some on C, e.g., 2, 3 and 4 on P, 4, 5 and 6 on (if P then C), and 2, 3 and 5 on C.

Let us work out the epistemic performances of the three procedures based on the arrangements above as an illustration (cf. List, 2008):

> **(1) Standard premise-based procedure:** With five members judging on P and (if P then C), simple majority rule requires at least three members to accept each proposition in order for the same proposition to be collectively accepted. For P, its probability of being judged correctly by the group equals the total probabilities of all majority judgment combinations which are correct. This includes instances when all members judge P correctly, i.e., 0.6^5, when four members judge P correctly, i.e., $(0.6)^4(1-0.6)$, and when three members judge P correctly, i.e., $(0.6)^3(1-0.6)^2$.

The probability of P being correctly judged by the group is, hence, $0.6^5 + 5(0.6)^4(0.4) + 10(0.6)^3(0.4)^2$, which is approximately 0.683. Likewise, the probability of (if P then C) being correctly judged by the group is $0.55^5 + 5(0.55)^4(0.45) + 10(0.55)^3(0.45)^2$, which is approximately 0.593. The overall epistemic performance of the procedure equals the product of the probabilities of P and (if P then C) being judged correctly by the group, which is approximately 0.405.

(2) Distributed premise-based procedure: With three individuals judging on P and (if P then C), simple majority rule requires at least two members to accept each proposition in order for the same proposition to be collectively accepted. Then, the probability of P being correctly judged by the group is $0.6^3 + 3(0.6)^2(0.4)$, which is 0.648. The probability of (if P then C) being correctly judged by the group is $0.55^3 + 3(0.55)^2(0.45)$, which is 0.575 approximately. The overall epistemic performance of the procedure is, therefore, 0.372 approximately.

(3) Distributed sequential priority procedure: There are three members judging each of the three propositions, P, (if P then C), and C. Since C is constrained by, and depends on, P and (if P then C) which are sequentially prior, the epistemic performance of the procedure is equal to that of the distributed premise-based procedure with three members each on P and (if P then C), i.e., 0.372 approximately. This is independent of the individual competence on C.

Aggregation procedure	Probability of P being judged correctly by the group	Probability of (if P then C) being judged correctly by the group	Overall epistemic performance
(1) Standard premise-based procedure	0.683 (app.)	0.593 (app.)	0.405 (app.)
(2) Distributed premise-based procedure	0.648	0.575 (app.)	0.372 (app.)
(3) Distributed sequential priority procedure	0.648	0.575 (app.)	0.372 (app.)

Table 6.3: Epistemic performances of different procedures (Case 6.1)

Table 6.3 summarises the epistemic performances of the three procedures. We note that, if the five members have equal levels of competence in judging both propositions P and (if P then C), the overall epistemic performances of all three types of procedures (i.e., 0.405; 0.372; 0.372) are higher than the probability of one single member judging both propositions correctly (i.e., (0.6)(0.55), or 0.33). This result is consistent with the celebrated Condorcet jury theorem (see Chapters 4 and 7). However, the distributed premise-based procedure performs less well than the standard premise-based procedure. This is because the number of members judging each proposition in the former case (i.e., three) is fewer than in the latter (i.e., five), which is also consistent with the Condorcet jury theorem.

On the other hand, the epistemic performances of both distributed procedures are the same, given that the premises are equivalent to the sequentially prioritised propositions, and the profile of individual competences and the cognitive division of labour in both procedures are the same.[118] Therefore, if we are to maximise the epistemic performance of collective decision-making when there is no individual in a group who is either more or less competent, i.e., no distinction between experts and ordinary people, then the standard premise-based procedure is recommended. At the same time, the standard premise-based procedure also engages more individuals in decision-making, which can also be justified from the procedural perspective.

Second possibility: Relative 'expert-ordinary people' distinction
Case 6.1 may look more ideal than we can expect in any collective decision-making on controversial issues involving specific knowledge and expertise. As the Technocratic-democratic Divide spells out, it is necessary for an aggregation procedure for environmental decision-making to be sensitive to the following fact: there exist certain individuals in a group who are more competent than others in making judgments on certain propositions, such as in the case below:

> **Case 6.2:** All individuals (with an odd number in total) make their
> judgments on propositions independently and truthfully, and they are

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[118] Having said that, the epistemic performances of the distributed premise-based procedure and the distributed sequential priority procedure can differ. This is possible for agendas with multiple propositions which are *not* logically connected, since there would be no distinction between 'premises' and 'conclusion', and hence the sequentially prioritised propositions (as in the latter procedure) are not necessarily equivalent to the premises (as in the former procedure).

more likely to be correct than incorrect in their own judgments. At the same time, some individuals have a higher competence, p', in making correct judgments on a proposition on the agenda, while some other individuals have a higher probability, p'', of making correct judgments on another proposition on the agenda, and so on.

Refer to the congestion charge example in Case 6.1. Suppose the individual competence of Members 2, 3 and 4 in judging P is increased from 0.6 to 0.7, while that of Members 5 and 6 remains at 0.6. Suppose further that Members 4, 5 and 6 have an increased individual competence from 0.55 to 0.6 in judging (if P then C), whereas the corresponding competence of Members 2 and 3 remains at 0.55. The cognitive division of labour, for the distributed procedures, follows that in Case 6.1, i.e., with Members 2, 3 and 4 on P, and Members 4, 5 and 6 on (if P then C). Table 6.4 shows the epistemic performances of the three procedures for Case 6.2.[119]

From Table 6.4, we see that both distributed procedures outperform (i.e., 0.508), in terms of truth-tracking, the standard premise-based procedure (i.e., 0.506). Besides, both distributed procedures and the standard premise-based procedure perform better than having Member 4, the most competent member on P and (if P then C), judge both propositions alone (i.e., (0.7)(0.6), or 0.42). Therefore, if we wish to maximise the epistemic performance of collective decision-making where different individuals are more competent in judging different propositions, we should opt for either of the two distributed procedures.

Aggregation procedure	Probability of P being judged correctly by the group	Probability of (if P then C) being judged correctly by the group	Overall epistemic performance
(1) Standard premise-based procedure	0.781 (app.)	0.648 (app.)	0.506 (app.)
(2) Distributed premise-based procedure	0.784	0.648	0.508 (app.)
(3) Distributed sequential priority procedure	0.784	0.648	0.508 (app.)

Table 6.4: Epistemic performances of different procedures (Case 6.2)

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[119] The values are found, similarly to that in Case 6.1, by summation of probabilities of the cases in which the majority decisions are correct.

Using a distributed procedure, individuals are assigned propositions for decision-making if their corresponding competence is relatively high. In this way, individuals who make decisions on a particular proposition can be regarded as experts relative to that proposition, whilst those who do not make decisions on that proposition are ordinary people relative to that proposition. If the number of propositions in which each individual is an expert is the same, all individuals will be assigned the same number of propositions, which is consistent with democratic equality in terms of equality of judgmental power among individuals. However, if, in the group, there are some individuals who are experts in more propositions than others, e.g., Member 4 in Case 6.2, the distributed procedure becomes less democratically equal.

It is essential to note that, with the distributed sequential priority procedure, even if every individual is assigned an equal number of proposition(s) to make judgment(s) on, those who are assigned propositions which are sequentially prior may have more judgmental power, since their judgments potentially constrain the judgments of individuals who are assigned some sequentially later propositions. In other words, with the distributed sequential priority procedure, what matters is not only the number of propositions allocated but also the priority of the propositions in the sequence.

Third possibility: Partial 'expert-ordinary people' distinction
Case 6.2 represents a situation in which every individual is competent in making a judgment on at least one proposition on the agenda, and each individual is an expert in some area(s) as reflected by which proposition(s) he/she is assigned. In other words, no individual is an ordinary person on all propositions on the agenda. However, what the Technocratic-democratic Divide represents can be more complicated than that. An important assumption of technocracy is that, on a given agenda, there exist a number of individuals (i.e., ordinary people) who are not in any sense more competent than other individuals (i.e., experts). On epistemic grounds, the task of decision-making may, therefore, be left exclusively to experts who are more likely to reach decisions that track the truth. This is captured by the following case:

> **Case 6.3:** All individuals make their judgments on propositions independently and truthfully, and they are more likely to be correct than

incorrect in their own judgments. At the same time, some individuals have a higher competence, p', in making correct judgments on a proposition on the agenda; and for other propositions, all individuals share the same competence, p, in making their judgments.

Case 6.3 represents a typical scenario in environmental decision-making. Some propositions are positive, which may be verified only through the use of certain expert knowledge and skills. P in the congestion charge example may demand some kind of medical and environmental knowledge in order for an individual to judge it correctly. Other common examples in the environment arena include "policy X reduces carbon dioxide by $y\%$ annually" and "the globe is heating up", etc. If there are people who possess the relevant knowledge, while others do not, it is possible that the former possess higher competence in judging these propositions.

On the other hand, some propositions are normative, which, at least partly, involves value judgments. For these propositions, such as (if P then C) in the congestion charge example, it is more difficult, if not impossible, to verify whether they are true. Some other examples in environmental decision-making include "if policy X reduces carbon dioxide by $y\%$ annually, then policy X should be adopted" and "the globe is heating up, so we should minimise air travel", etc. Our experience shows that it is generally harder to identify certain individuals who possess more knowledge, or higher competence, than some other individuals in judging these normative propositions.

Now, suppose Members 2, 3 and 4 still share, as in Case 6.2, the competence of 0.7 in judging P, which is higher than that of Members 5 and 6 (i.e., 0.6). At the same time, the probability of a correct individual judgment on (if P then C) is, as in Case 6.1, equal across all individuals, which is 0.55. For P, we may regard Members 2, 3 and 4 as experts but Members 5 and 6 as ordinary people, whilst there is no distinction between experts and ordinary people for (if P then C). For the standard premise-based procedure, to reiterate, all the five members make judgments on both propositions regardless of their competence. For the distributed procedures, Members 2, 3 and 4, on the grounds of having higher competence, specialise in judging P, whilst (if P then C) is left to all the five individuals. Table 6.5 shows the epistemic performances of the three procedures for Case 6.3.

From Table 6.5, we note that, by letting the three experts in *P* specialise in that proposition, both distributed procedures are more likely to produce correct collective judgments on *P* (i.e., 0.784) than the standard premise-based procedure (i.e., 0.781). Also, in terms of truth-tracking in both propositions, the former procedures perform better (i.e., 0.465) than the latter procedure (i.e., 0.463). At the same time, all three procedures perform better than having any single expert in *P*, such as Member 2, judge both propositions alone (i.e., (0.7)(0.55), or 0.385). Therefore, if we wish to maximise the *overall* epistemic performance of collective decision-making where there is such an 'expert-ordinary people' distinction in some but not all proposition(s) on the agenda, then we should adopt the distributed procedures.

Aggregation procedure	Probability of *P* being judged correctly by the group	Probability of (if *P* then *C*) being judged correctly by the group	Overall epistemic performance
(1) Standard premise-based procedure	0.781 (app.)	0.593 (app.)	0.463 (app.)
(2) Distributed premise-based procedure	0.784	0.593 (app.)	0.465 (app.)
(3) Distributed sequential priority procedure	0.784	0.593 (app.)	0.465 (app.)

Table 6.5: Epistemic performances of different procedures (Case 6.3)

Lessons learnt

What general observations can we make from the three cases above? As mentioned, our aim is to identify suitable decision-making procedures for constructing SED for reconciling the Technocratic-democratic Divide. The Divide states that there is tension between two competing approaches in collective environmental decision-making, i.e., technocracy and democracy, on both the procedural and the epistemic dimensions. To reconcile this tension, we have formulated three minimal benchmarks, as in Section 6.2, i.e. epistemic quality, consensus preservation and non-dictatorship. I have, based on these benchmarks and the impossibility results in the theory of judgment aggregation, arrived at three models of decision-making,

namely the standard premise-based procedure, the distributed premise-based procedure and the distributed sequential priority procedure.

All three cases assume that individuals (1) are more likely to be correct than incorrect; and (2) make their judgments independently and truthfully. We note, from these cases, that dictatorship by one single individual does not necessarily maximise the overall epistemic quality, even if the individual is an expert in some or all propositions on the agenda. At the same time, it is possible to boost the epistemic performance of a decision-making procedure without violating the minimal procedural benchmarks of non-dictatorship and consensus preservation. If there is no 'experts-ordinary people' distinction, the standard premise-based procedure outperforms, in an epistemic sense, both distributed procedures.

However, the distributed procedures are more likely than the standard premise-based procedure to produce correct collective judgments on propositions in which individuals possessing higher competence, or experts, specialise, provided that the increased probability of truth tracking through such specialisation is not too small (List, 2008). The overall epistemic performances of the former procedures are also better than that of the latter procedure when the 'experts-ordinary people' distinction is partial and specialisation only takes place for certain proposition(s). As for the two distributed procedures, their epistemic performances are the same for non-simple agendas, provided that the premises are equivalent to the sequentially prioritised propositions, with the profile of individual competences and the cognitive division of labour being the same in both procedures.[120]

In terms of procedural fairness, equality of judgmental power is preserved by using the standard premise-based procedure in all cases. As for both distributed procedures, this hinges on whether all individuals are assigned an equal number of propositions. If this is so, as in Case 6.1 and Case 6.2, then they all have equal judgmental power over the agenda. Otherwise, the experts possess more judgmental power overall even if they are only more competent in judging certain proposition(s), as in Case 6.3.

It is worth remarking that, for non-simple agendas, the distributed sequential priority procedure is less democratically even-handed than the distributed premise-based procedure. This is because, even if individuals are assigned an equal number of

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[120] See footnote 97.

propositions, as in Case 6.1 and Case 6.2, those who judge propositions which are sequentially prior may constrain the decisions of those judging the sequentially later propositions, depending on the logical relations between these propositions. As for Case 6.3, *if* the ordinary people are assigned sequentially prior propositions where their judgments may constrain those of the experts on the sequentially later propositions, *then* the inequality between their judgmental power may be relieved. But *if*, instead, the experts are assigned sequentially prior propositions, *then* such inequality will be intensified. As we can see, the distributed sequential priority procedure allows fine-tuning of the reconciliation of the tension between epistemic performance and procedural fairness, particularly for Case 6.3.[121]

Figure 6.2 shows a simple decision tree for choosing between the three procedures for reconciling the Technocratic-democratic Divide under different circumstances, given a non-simple decision agenda as well as the assumptions that (1) individuals are more likely to be correct than incorrect; and (2) they make their judgments independently and truthfully.

6.4   Concluding remarks

In this chapter, I have discussed how the inter-disciplinary concept of distributed cognition illuminates insights into constructing a DTA institution for environmental decision-making. This institution, called Specialist Environmental Democracy (SED), comprises an aggregation procedure which assigns decision power to individuals with different competences on different propositions on an agenda. It aims to reconcile the Technocratic-democratic Divide which highlights the tension between the two desiderata for collective environmental decision-making, i.e., epistemic performance and procedural fairness. I have shown, on the basis of the theory of judgment aggregation, that SED is possible in the forms of either the distributed premise-based procedure or the distributed sequential priority procedure. I have, in addition, compared the epistemic performances of both models of SED with that of

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[121] Note, however, that this issue does not apply to decision agendas with propositions which are *not* logically connected. This is because, for these agendas, the judgments on the sequentially prior propositions no longer constrain the judgments on the sequentially later propositions. In this way, the distributed sequential priority procedure treats all individuals equally in terms of decision power, as the distributed premise-based procedure does.

the standard premise-based procedure, and suggested how we may choose between these procedures in order to reconcile the Technocratic-democratic Divide under different circumstances.
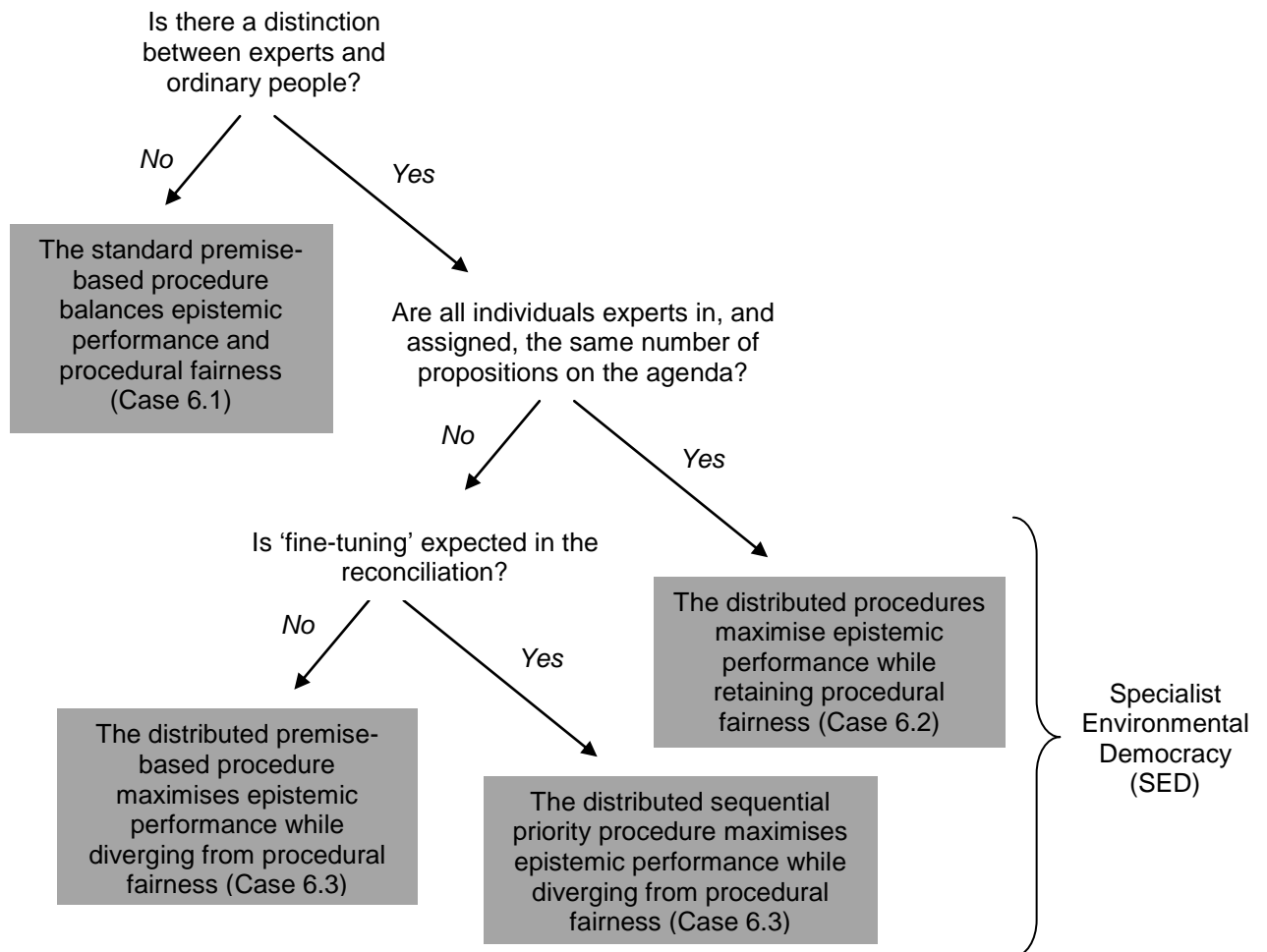

Figure 6.2: A simple decision tree for reconciling the Technocratic-democratic Divide[122]

In fact, SED is more than a theoretical construct for reconciling the Technocratic-democratic Divide, and it can be extended to a useful practical application. It supplements, for example, an innovative method for public engagement developed by a group of researchers in the U.K., namely Deliberative Mapping. It aims to involve both specialists and citizens from a wide range of social groups in making assessments, through deliberation, on complex technological and environmental policy issues.

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[122] This applies only to non-simple decision agendas. It is assumed that individuals are sufficiently competent and that they make their judgments independently and truthfully.

Broadly speaking, Deliberative Mapping works as follows. For a given policy issue, a number of citizens are recruited and grouped into panels differentiated by gender and socio-economic class. At the same time, some specialists are also recruited across different perspectives, disciplines and institutional affiliations. Both citizens and specialists are offered a common set of options regarding the policy issue which they are asked to appraise. The panels of citizens meet on several occasions to discuss and evaluate the given options, whereas the specialists appraise the options in interviews. Then, the citizens and specialists gather at a joint workshop to interact and exchange information and opinions through facilitated deliberation. After that, both groups of people meet separately to finalise their respective appraisals of the options. An experiment was carried out between 2001 and 2003 on an issue concerning kidney transplantation, and there was a significant level of agreement between citizens and specialists on the appraisal criteria (Davies et al., 2003).

While Deliberative Mapping is expected to enhance cooperative policy *dialogues* between citizens and specialists, there is great potential for developing this into a *decision-making* mechanism for environmental issues which engages both groups of people. However, in order for Deliberative Mapping to deliver *collective decisions*, it has to be sensitive to the possibility of non-decision after deliberation, since deliberation alone does not guarantee universal consensus (see Chapter 5). If decisions are necessary, then there must be a separate arrangement which resolves any post-deliberation disagreement, such as an aggregation procedure.

SED enriches Deliberative Mapping in the sense that it turns the latter into a DTA institution such that substantive collective decisions are possible. In addition, it gives weight to both procedural and epistemic concerns of decision-making. In case of unresolvable disagreement after deliberation, experts and ordinary people specialise in judging on propositions according to their areas and levels of competence (if any). The resulting decision-making process will then reflect an appropriate balance between epistemic performance and procedural fairness.

At the same time, SED, as a DTA institution, does not exclude the possibility of deliberation before aggregation. With the original Deliberative Mapping in place, experts and ordinary people can learn from each other and hence boost the chance of correct decisions. This responds to a classical challenge to technocracy that experts alone cannot grasp all the necessary knowledge for correct judgments. Since such

knowledge is fragmentary and dispersed, it is possible that wisdom will be found in the perspective of ordinary people even for some highly technical and scientific issues. We may, then, expect some epistemic benefits once experts and ordinary people are given an opportunity to communicate with each other, such as that in Deliberative Mapping. Therefore, SED supplements and complements the original Deliberative Mapping, offering more than simply a theoretical model for reconciling the Technocratic-democratic Divide in environmental decision-making.

CHAPTER 7

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COGNITIVE DISSONANCE AND THE EPISTEMIC PERFORMANCE OF (ENVIRONMENTAL-) DELIBERATIVE-DEMOCRATIC INSTITUTIONS

In the last two chapters, I demonstrated, by drawing on the concepts of meta-agreement and distributed cognition, how we can avoid the paradox of judgment aggregation by modifying the input and responsiveness conditions of the aggregation component for a deliberation-then-aggregation (DTA) institution. Such a paradox, as illustrated by the discursive dilemma and the associated impossibility theorems, points out that no aggregation procedure can simultaneously satisfy all three desiderata for democracy, i.e., robustness to pluralism, majoritarianism and collective rationality. Chapter 5 examines how robustness to pluralism may be relaxed in order to avoid the paradox across different decision agendas, whereas Chapter 6 focuses more specifically on environmental decision-making and shows how majoritarianism may be relaxed in order to reconcile the Technocratic-democratic Divide in agendas with multiple interconnected propositions.

As discussed in Chapter 6, the paradox of judgement aggregation can also be avoided by relaxing collective rationality. To reiterate, collective rationality demands that the aggregation procedure produces consistent and complete collective judgments as decisions. We may relax the requirement of completeness by adopting a conclusion-based procedure such as supermajority rule or unanimity rule, so that collective judgments need not be made on all propositions on the agenda. An example of unanimity rule is a deliberation-only decision mechanism which requires a universal consensus on a proposition in order to obtain a collective decision on the same proposition. However, a deliberative-democratic institution adopting such procedures is, as pointed out in Chapter 5, prone to producing no decisions, and it is also questionable how many individuals can be engaged face to face in a large-scale mass public.

In response to both shortfalls, we may rearrange the deliberative process in such a way as to maximise the number of individuals who can participate in deliberation and to settle any disagreements after deliberation and before a final decision. To achieve the latter, we may, as argued in Chapter 5, incorporate a post-deliberation aggregation procedure as in a DTA institution. To achieve the former, we may restrict the inputs of individuals, such as the length and time of their speeches. Alternatively, we may adopt Goodin's (2003) 'internal-reflective deliberation' proposal. This asks individuals to deliberate by carrying out reflection in their own minds instead of face-to-face debates/discussions with others. How plausible is such a proposal? What would happen if a DTA institution was so arranged?

The theory of cognitive dissonance in psychology offers insights into addressing both these questions. Cognitive dissonance refers to a situation in which an individual experiences a negative state of emotion. It was first theorised by Leon Festinger in 1957, and the theory has since been influential in social psychology, particularly in the area of judgment and decision-making (Plous, 1993). Its applications have also spanned different disciplines in explaining consumer, health, economic and political behaviours (Cooper, 2007). The cognitive dissonance theory explains and predicts individual behaviour in terms of dissonant or inconsistent cognitions.[123]

In this chapter, I shall demonstrate how the cognitive dissonance theory reveals an epistemic pitfall for a DTA institution employing Goodin's 'internal-reflective' deliberation followed immediately by aggregation, which can be labelled as a 'reflect-and-vote arrangement' (RAVA). In particular, I shall examine the effect of cognitive dissonance on decision-making on what I shall call 'behavioural-adjustment agendas', where individuals make decisions regarding the adjustment of their own existing behaviour. Drawing on the cognitive dissonance theory and the Condorcet jury theorem, I shall show that individual decisions on behavioural-adjustment agendas can be distorted by inconsistent cognitions, which undermines

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[123] While some kinds of behaviour mainly relate to one's own concerns, such as choosing to sleep rather than study, others carry implications at the collective level. For example, how consumers choose between two goods determines the corresponding demand for both goods in the market. Likewise, how members of a committee decide on an issue determines the corresponding verdict of the committee. In both cases, the cognitive dissonance theory informs us about how dissonant cognitions may affect individual inputs into the market exchange as well as the decision-making process.

the epistemic quality of collective decisions from a RAVA. I also suggest several solutions to the epistemic pitfall of a RAVA, which may serve as a foundation for constructing DTA institutions with capacity for collective (environmental) decision-making on behavioural-adjustment agendas.

My discussion has the following structure. In Section 7.1, I shall begin by introducing Goodin's model of reflective democracy and explaining how this attempts to address two practicability constraints of institutionalising (environmental) deliberative democracy. In Section 7.2, I shall briefly recapitulate the Condorcet jury theorem which assesses the epistemic quality of (environmental) deliberative democracy. In Section 7.3, I shall demonstrate how the cognitive dissonance theory predicts individual decisions on behavioural-adjustment agendas and why this hampers the epistemic quality of democratic inputs. In Section 7.4, I shall suggest several proposals which mitigate the tensions between three desiderata for a RAVA. In Section 7.5, I shall make some concluding remarks.

7.1 Reflective democracy and the practicability desideratum

Consider the following hypothetical example (which is similar to the congestion charge example in Chapter 6):

> **The road tax example:** In a town hall meeting, 100 residents gather to decide whether or not the local government should levy a road tax on private vehicles which enter into the high street during rush hours. They attempt, by the end of the meeting, to reach a substantive decision on the above agenda through deliberation. The duration of the meeting is three hours.

Suppose it takes ten minutes for the chairperson to open the meeting and wrap up the discussion. Assuming that all the remaining time is allocated to continuous deliberation among the 100 residents, each resident has on average 1.7 minutes to speak. Since they would like to reach a decision at the end, each is expected to, at least, express in his/her speech a judgment on the agenda as to whether a road tax should be levied.

There are two practical concerns, however. First, does each resident have sufficient time to express everything he/she wants to? If a person speaks at a speed of 100 words per minute, then in 1.7 minutes he/she can probably deliver a speech of fewer than 200 words. With such a limited time-frame, it is questionable whether the person can clearly articulate his/her own opinion or effectively respond to the opinions of others. Second, can the residents reach a substantive decision on the agenda through deliberation alone? This depends on whether they can achieve a universal consensus, or whether all 100 individuals hold the same opinion on the agenda. As long as there is one single individual who disagrees with the other individuals, and his/her opinion remains unchanged after deliberation, then there will be no universal consensus and hence no collective decision.

The first concern, or what I call the 'time-and-size challenge', speaks of the likely trade-offs between the number of decision-makers and the amount of time allocated to each individual for deliberation. Given that the time available is finite, as the number of individuals increases, the time each individual receives decreases. In other words, within a particular time-frame, the more time each individual is allocated, the fewer individuals can participate in decision-making. This brings about a challenge for democracy when the size of the group is considerable, and it is practically difficult, if not impossible, to engage *every* individual in the process of deliberation.

The second concern, as highlighted in Chapter 5, is the 'non-decision challenge'. This means that using deliberation as the only mechanism for decision-making demands unanimous agreement on the agenda in order to arrive at a collective decision. This concern is related to the first one. When the size of the group is large, it is likely that disagreements will emerge. When the time for deliberation is limited, it becomes hard to change individual opinions so as to bring about agreements. If individual opinions are deeply divided, or if the agenda is more complex, it is not likely that universal consensus will be reached by the end of deliberation. This hampers the decision-making function of deliberative democracy.

Both the time-and-size and the non-decision challenges can be considered as practicability constraints on institutionalising (environmental) deliberative democracy. They impose restrictions on the operational design of (environmental-) deliberative-democratic institutions. A practicable design should, therefore, take into account, and identify ways to tackle, these challenges.

Goodin's proposal: Reflective democracy

Goodin (2008) suggests that the time-and-size and the non-decision challenges can be tackled by making deliberation 'internal-reflective'. He asserts that:

> "In any moderately large community, of course, deliberation must almost inevitably be supplemented by voting as the ultimate decision procedure. It is simply unrealistic to expect any moderately large group to come to complete consensus, however long they talk together." (p. 108)

What Goodin contends is that, as discussed in Chapter 5, deliberative democracy should be arranged as 'first talk, then vote', or a 'deliberation-then-voting' (DTA) institution as I have suggested. He claims that voting is necessary for conferring democratic legitimacy and for settling disagreements which are irresolvable through alternative means. According to Goodin, since it is unrealistic to expect universal consensus from deliberation in a sizeable group, there must be a separate mechanism for *making decisions* − a post-deliberation aggregation procedure is an example of such mechanism. This responds to the non-decision challenge.[124]

At the same time, Goodin (2003) is aware of how the context may affect the implementation of deliberative democracy. He argues that, while face-to-face interaction is an ideal form of deliberation, it is technically infeasible in any large-scale society. Imagine, in the road tax example above, that the number of residents grows to 1,000. If each resident was still allocated 1.7 minutes to speak, this would require more than 28 hours (i.e., more than one day) in order to let all the residents speak. In most contemporary democracies, the number of citizens (who may be involved in collective decision-making) is undoubtedly far greater than 1,000. This relates to the time-and-size challenge.

To tackle the time-and-size challenge, Goodin (2003) recommends a model of reflective democracy which focuses on the 'internal-reflective' aspect of deliberation.[125] Contrary to its 'external-collective' counterpart, this model of

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[124] Goodin also argues that aggregation after deliberation avoids the undesirable effect of path dependence. See Goodin (2008, pp. 108-126) and my discussion in Chapter 5.

[125] Goodin identifies some other possible strategies to tackle the time-and-size challenge, but claims that these are unsuccessful. This is because these strategies constrain either the number of people participating in deliberation or the diversity of admissible inputs, which makes the process insufficiently deliberative or even undemocratic. Disjointed deliberation, for instance, breaks a large community down into smaller groups, which allows genuine deliberation to take place with a manageable group size. In the real world, however, it is hardly democratic because numerous individuals are still excluded from participating in any of these groups (Goodin, 2003, pp. 172-174).

deliberation is an *internal mental* process which takes place inside the minds of individuals, and in order to deliberate people do not need to be 'communicatively present' (pp. 171, 179). Individuals are asked instead to understand and internalise each other's perspectives by imagining themselves in the situations of others with, for example, literary, visual or performing arts. Individuals are expected, having considered all these perspectives, to carry out internal dialogues. This is followed by some 'external-collective' measures, i.e., spoken exchange of opinions and voting to settle disagreements. Goodin thinks that it is not difficult to realise reflective democracy, since such 'empathetic imaginings' are often used in ordinary conversations (p. 171).

Through this kind of 'empathetic imagining', deliberation becomes possible in large-scale mass societies without compromising, as other 'external-collective' deliberative arrangements must, on the number of individuals who can participate in deliberation or the diversity of individual inputs (pp. 172-178). Goodin asserts that, by emphasising the 'internal-reflective' aspect of deliberative democracy, we can guarantee not only "the free and equal expression of opinions in the public sphere", but also opportunities for individuals to "hear or read, internalize and respond" (p. 178). This is particularly important for representing the interests of the 'communicatively inept' or the 'communicatively inert' who, in such a reflective process of democracy, "need not be physically present in order for them to be imaginatively present" (p. 183).

Goodin's reflective democracy is highly relevant to collective environmental decision-making owing to its emphasis on representing the mute interests of future generations and non-humans. The underlying rationale for this representation – "the interests of non-humans as well as of future humans are as deserving of protection as are the interests of anyone or anything else" – is in line with mainstream environmental thinking (p. 214). In order to realise such protection, individuals must be induced "to internalize the interests of nature and the future" (p. 220), and this can take place through participatory democracy. For this internalisation to be possible, however, it is necessary for individuals, in the first place, to inform themselves "as to the content of mute interests such as those of nature or the future" (p. 225). This can be achieved, as Goodin argues, through 'internal-reflective' deliberation.

Having said that, Goodin stresses that 'internal-reflective' deliberation is only a necessary, and not a sufficient, component of democratic institutions, and should be

followed by 'external-collective' mechanisms. This is because the results of 'internal-reflective' deliberation have to be publicly validated at some point in order to become democratically legitimate collective decisions. While talking is one of these 'external-collective' mechanisms, Goodin states explicitly that any deliberative-democratic process should end with voting:

> "Deliberation is supposed to have an *end*, it is supposed to *resolve* something. Occasionally deliberation yields a decision directly, as when a genuine consensus has emerged. But deliberative assemblies even of the most ideal sort more typically have to force a decision, announcing an end to the deliberations and calling for a vote. That final show of hands is what is crucial in conferring democratic legitimacy on the decision." (p. 108; his emphasis)

According to Goodin, therefore, both the time-and-size and the non-decision challenges of (environmental) deliberative democracy in large-scale mass societies can be tackled by combining 'internal-reflective' deliberation, 'external-collective' deliberation and aggregation in order to settle disagreements and ensure legitimate collective decisions. It is worth noting that, although Goodin acknowledges the value of talking after internal reflection, he does not exclude the possibility of internal reflections being followed directly by aggregation:

> "[I]n large-scale mass societies the requirements of deliberative democracy may be met by expansive internal-reflective deliberations culminating in a distinctively non-deliberative visit to the poll booth. And the more democratically deliberative our internal reflections manage to be, the less it will matter that external-collective decision procedures can never be as directly deliberatively democratic as we might like in large-scale mass societies." (p. 193)

In other words, it is possible, in large-scale mass societies, for deliberation to take the form of internal reflection instead of talking, followed by aggregation. This is sensible since, under some circumstances, the time-and-size challenge may be so immense that it is infeasible to expect genuine verbal exchange of opinions after internal reflection. What seems hard to avoid is another 'external-collective' procedure following internal reflection, i.e., aggregation. This makes sense also if we

consider the non-decision challenge. On the basis of Goodin's proposal, we can formulate a practicability desideratum for a good DTA institution in response to both challenges:

> **(P) Practicability:** The DTA institution consists of 'internal-reflective' deliberation by individuals followed by aggregation, which I label as a 'reflect-then-vote arrangement' (RAVA).

In the following sections, I shall examine whether we can construct a DTA institution with a RAVA which satisfies such a practicability desideratum and, at the same time, is applicable to different types of decision agenda and maximises the epistemic performance of (environmental) decision-making.

7.2 The epistemic performance of DTA institutions

Let me set out a standard for evaluating the epistemic performance of a decision-making procedure with both deliberation and aggregation. Note that our discussion is slightly different from that in Chapter 6, which focused exclusively on non-simple agendas with multiple interconnected propositions. In this chapter, we expect a DTA institution to be applicable to different types of agenda, including those comprising choices between two or more alternatives as well as judgments on a single or multiple proposition(s), on any kind of decision issue. This is arguably a desideratum for a *good* DTA institution for collective (environmental) decision-making:

> **(UA) Universal agendas:** The DTA institution is applicable to different types of agenda on any kind of decision issue for collective (environmental) decision-making.

The deliberation component of a DTA institution is desirable from the viewpoint of both procedure and outcome.[126] From the latter perspective, deliberation is justified

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[126] On the other hand, there are arguments which focus on the procedural benefit of deliberation. For example, democratic deliberation is inclusive of all individuals affected (see, for example, Cohen, 1989; Elster, 1998; Young, 1996, 2000), egalitarian towards all individuals in terms of participation and influence (see, for example, Bohman, 1996; Christiano, 1996a, 2008; Gutmann and Thompson, 1996) as well as reasoned and other-regarding (see, for example, Estlund, 1993; Gutmann and Thompson, 1996; Mansbridge, 1996).

because it produces good or correct decisions (see, for example, Cohen, 1986; Estlund, 1993; Gutmann and Thompson, 1996; Gaus, 1997). At the same time, in green political theory, deliberation is considered appealing for environmental decision-making on similar epistemic grounds.[127] The open nature of deliberation produces collective decisions which tend to reflect environmental values or the common good (see, for example, Dryzek, 1990; Dobson, 1996a; Barry, 1999; Smith, 2003). This is because deliberation, as some green theorists argue, enables public participation to take place, which eliminates any decisional errors and defects of fallible humans and hence makes collective decisions more likely to be correct (Dobson, 2007).

Can a DTA institution be justified in such an epistemic sense? To answer this, we shall focus on the *decision* mechanism, or the aggregation component of DTA, since this determines the final collective decision. To reiterate what was introduced in Chapters 4 and 6, the 'truth' refers to a fact regarding the best decision outcome (e.g., in terms of goodness or correctness), where this piece of fact is independent of the decision mechanism (Cohen, 1986; List, 2002a). 'Tracking the truth' means that a certain decision output is chosen by a decision mechanism if, and only if, it is good or correct (Nozick, 1981).[128]

Consider a scenario where, in city *A*, there are an odd number of citizens, *n*, who are deciding whether a road tax should be imposed in order to reduce air pollution in *A* (Scenario 7.1). There are two possible states of the world and one of these serves as the truth: either (1) a road tax should be imposed in order to reduce air pollution in *A*; or (2) a road tax should not be imposed in order to reduce air pollution in *A*. A decision mechanism tracks the truth about the states of the world if it chooses (1) if, and only if, (1) is true; and it chooses (2) if, and only if, (2) is true (see also Chapters 4 and 6).

In other words, *if* a DTA institution satisfies both conditions, *then* it excels in generating collective decisions that track the truth, and is thus said to be favoured by

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[127] Deliberation is also justified in environmental decision-making on procedural grounds. For instance, it is inclusive of different opinions and interests and, through rational and other-regarding deliberation, it provides an equal opportunity for the interests of future generations, non-humans and nature to be internalised and represented in the decision-making process (see, for example, Dryzek, 2000; Eckersley, 2000; Goodin, 2003).

[128] I set aside the ontological debate as to whether there is a truth as such to be tracked since this is beyond the scope of this paper. I assume that this truth exists for all kinds of beliefs or propositions (i.e., realism; see Wright, 1992) and that a belief or proposition is true if, and only if, it corresponds to the relevant fact (i.e., the correspondence theory of truth; see Putnam, 1978).

the epistemic account of justification. In order to determine whether a DTA institution is desirable in the epistemic sense, we ask whether it is, relatively, favoured over other alternatives by such an account of justification. For example, if it is shown that, under certain assumptions, a DTA institution (with simple majority rule) is more likely than its alternatives (e.g., a deliberation-only institution) to produce correct decisions, then, under these assumptions, such a DTA institution is regarded as a more desirable decision mechanism.

The Condorcet jury theorem (revisited)

Let us focus on the aggregation component of DTA, and take simple majority rule as the decision mechanism used. Consider the following assumptions:

Competence: All individuals have the same probability p of being correct and each is more likely to be correct than incorrect in his/her own decision, i.e., $0.5 < p < 1$.[129]

Independence and truthfulness: All individuals make their decisions independently and express their decisions truthfully, given the state of the world.

If the three assumptions hold, then the probability that all individuals will make a correct collective decision using simple majority rule, P_n, is given by the following formula:

$$P_n = \sum_{h=\frac{(n+1)}{2}}^{n} \left[\frac{n!}{h!(n-h)!} \right] p^h (1-p)^{n-h}$$

Since the value of p is greater than 0.5 and smaller than 1 (i.e., the competence assumption), the value of P_n approaches 1 (or certainty) as n increases. This is the Condorcet jury theorem, which we discussed in Chapters 4 and 6 (Condorcet, 1785; Grofman, Owen and Feld, 1983).

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[129] It is worth noting that this assumption can be relaxed to require, instead, only that each individual shares an *average* probability, $\bar{p}$, of being correct, where $0.5 < \bar{p} < 1$ and $\bar{p} := \frac{(p_1 + p_2 + ... + p_n)}{n}$.

We can apply the Condorcet jury theorem to assessing the epistemic performance of DTA institutions (see also Goodin, 2003; Estlund, 2008). From the epistemic perspective, a DTA institution is desirable if it tracks the truth at least better than its rivals. A decision mechanism is democratic if, at least, it is not dictatorship but as inclusive as possible (see also Chapter 3). Simple majority rule and unanimity are both acceptable mechanisms in this respect, and a standard for measuring inclusiveness is the number of individuals.

Suppose there are three citizens in Scenario 7.1, and each is more likely to be correct than incorrect in his/her decision, say, with a competence of 0.65. According to the above formula, P_n is approximately 0.718 when n is 3 and p is 0.65. Compared with dictatorship by one citizen, in which the probability of correct collective decision is p (i.e., 0.65), simple majority rule appears to work better in tracking the truth. Similarly, unanimity rule where the probability of correct collective decision is p^n (i.e., 0.65^3 or approximately 0.275), is outperformed in such an epistemic sense by simple majority rule.

However, it is worth noting that, as the number of individuals increases, simple majority rule outperforms dictatorship in identifying correct decisions only when p is larger than 0.5 (and smaller than 1), i.e., when the competence assumption of the Condorcet jury theorem holds. Otherwise, either dictatorship outperforms simple majority rule (when p is smaller than 0.5 and larger than 0) or they perform equally well (when p is 0.5). In other words, the relative epistemic performance of simple majority rule compared with dictatorship is contingent on the competence assumption.

Apart from simple majority rule, deliberation itself can also serve as a decision mechanism, provided that universal consensus emerges in the end. Here, collective decisions follow from consensus, but if such consensus is not available, there will be no decision. This is equivalent to unanimity rule (see Chapter 4). Unanimity rule always underperforms simple majority rule and dictatorship, in terms of identifying correct decisions, as the number of individuals increases, regardless of the value of p as long as it is between 0 and 1. This means that relying *solely* on deliberation for decisions is, broadly speaking, not desirable as a means of identifying correct

collective decisions. [130] This echoes the non-decision challenge as pinpointed in Section 7.1.

Alternatively, aggregation with simple majority rule may be introduced after deliberation, thus forming a DTA institution (Cohen, 1989; Dryzek and List, 2003; Goodin, 2003, 2009; see also Chapter 5). In this way democratic decisions no longer depend on the availability of universal consensus, which may not in the end be achievable (Cohen, 1989; van Mill, 1996). Instead, collective decisions are always obtainable by aggregating post-deliberative, even if diverse, individual decisions. This avoids the non-decision challenge (van Mill, 1996; Ferejohn, 2000). More importantly, the epistemic performance of a decision mechanism is boosted by replacing unanimity rule with simple majority rule. [131]

At least two lessons can be drawn from the above: (1) according to the Condorcet jury theorem, the epistemic performance of a DTA institution with simple majority rule is superior to that of a deliberation-only institution; and (2) a DTA institution with simple majority rule is a desirable truth-tracker *only if* individuals are more likely to make correct than incorrect decisions, i.e., when the competence assumption holds.

We may now formulate, in addition to desiderata (P) and (UA), another crucial desideratum for a good DTA institution for collective (environmental) decision-making:

Epistemic performance (EP): The DTA institution is a desirable truth-tracker.

In the rest of this chapter, I shall show that, owing to the effect of cognitive dissonance, there are tensions between the three desiderata, i.e., practicability (P), universal agendas (UA) and epistemic performance (EP). In other words, cognitive dissonance raises challenges for any attempt to construct a DTA institution based on all these three conditions.

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[130] On the other hand, unanimity rule is good at avoiding incorrect decisions. This is because an incorrect decision is available if, and only if, all individuals unanimously choose the incorrect alternative, i.e. $(1-p)^n$. Hence the probability that there is no *incorrect* collective decision is $[1-(1-p)^n]$ whose value increases as n increases, regardless of the value of p, as long as p is between 0 and 1. See List (2005) for further discussion.

[131] This, of course, assumes that all the assumptions of the Condorcet jury theorem hold. It is important to note that the independence assumption does not cease to hold as a result of deliberation, as long as individuals do not decide, after deliberation, in such a way that they comply blindly with the decisions of other individuals. See Estlund (1994) for further discussion.

7.3 Cognitive dissonance, behavioural adjustment agendas and the epistemic quality of aggregative inputs

The concept of cognitive dissonance was introduced in 1957 by Festinger, a social psychologist. It refers to an unpleasant state, or more precisely a negative emotion, which people experience upon recognising inconsistency between their cognitions. These cognitions can be in the forms of attitudes (beliefs) or actual behaviour. If an individual, Andy, holds a set of cognitions α and χ such that α and χ are mutually inconsistent, then α and χ are dissonant cognitions, and hence Andy will experience cognitive dissonance (Festinger, 1957). Say, for example, that Andy holds the following set of attitudes (Scenario 7.2):

Cognition α: "I should protect the environment."

Cognition β: "If I should protect the environment, then I should take the underground rather than drive to work."

Meanwhile, Andy is also aware of his actual behaviour:

Cognition χ : "I drive rather than take the underground to work."

As we can see, cognitions α and β are (practically) inconsistent with cognition χ.[132] In other words, the two attitudes on what Andy should do, i.e., protect the environment and hence take the underground to work, conflict with Andy's behaviour, what he actually does, i.e., he drives instead of taking the train to work. In psychology, this state of the world is described as Andy experiencing cognitive dissonance.

The theory of cognitive dissonance is premised on the view that individuals cannot tolerate the unpleasant feeling of inconsistent cognitions and are driven to reduce such a feeling (Festinger, 1957; Cooper, 2007). It explains and predicts individual behaviour on the basis of how individuals restore consistency to their conflicting cognitions. For example, if, in Scenario 7.2, it turns out that Andy keeps driving to work, the theory offers an explanation of why Andy does this in order to resolve the inconsistency between cognitions. The theory also serves to predict what

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[132] Note that the inconsistency here is not a logical but a practical one.

another person would do if he/she possessed the same set of inconsistent cognitions as Andy.

How can such an unpleasant feeling be reduced? According to the cognitive dissonance theory, the greater the inconsistency between an individual's cognitions, the greater the discomfort the individual feels, and hence, the more motivated he/she is to reduce the feeling. The level of inconsistency is measured by dissonance magnitude, which is proportional to the number of inconsistent cognitions but inversely proportional to the number of consistent cognitions, each weighted by its importance (Cooper, 2007).[133]

This implies that there are at least two approaches to reducing the level of inconsistent cognitions. First, one may seek new cognitions or bolster consistent cognitions and/or boost their importance (Sherman and Gorkin, 1980). Second, one may also alter inconsistent cognitions and/or shrink their importance (Simon et al., 1995; Cooper, 2007). Both approaches can be applied through changing one's attitudes and/or behaviour:

Changing attitudes: This can be done by adding new attitudes and/or removing or modifying existing attitudes. For example, Andy may (a) dismiss α so that he believes that "It is not necessary for me to protect the environment" (α'); or (b) conditionalise β so that it becomes "If I should protect the environment, then I should take the underground rather than drive to work, *as long as* this does not cause a lot of inconvenience" (β'), and supplement β' with "taking the underground to work is very inconvenient" (ε). Thus, for (a), with α', β is consistent with χ; and for (b), α, β', ε and χ are also mutually consistent.

Changing behaviour: This can be achieved more directly by adjusting one's behaviour. For instance, Andy may give up driving and take the underground to work. In this way, χ will be modified as "I take the underground rather than drive to work" (χ') which is consistent with α and β.

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[133] This is represented by the following formula:

$$\text{Dissonance magnitude} = \frac{\sum(\text{all discrepant cognitions} \times \text{importance})}{\sum(\text{all consonant cognitions} \times \text{importance})}$$

To reduce the unpleasant feeling of dissonant cognitions, it is sufficient for an individual to change either his/her attitudes or his/her behaviour. However, it has been shown in a number of psychological studies that people in the real world tend to take the route of changing their attitudes in order to make these consistent with their existing behaviour (Cooper and Fazio, 1984; Petty and Wegener, 1998; Smith and Mackie, 2000). This is usually explained by the view that people will change cognitions with the least resistance to change (Festinger, 1957), since changing a cognition of one's behaviour is more difficult than changing a cognition of one's attitude (Cooper, 2007).

On the basis of the above empirical observation, the cognitive dissonance theory is able to predict what an individual will do with dissonant cognitions. According to the cognitive dissonance theory, Andy will, for example, change his attitudes about environmental protection and/or commuting instead of changing his behaviour from driving to taking the train.

Cognitive dissonance and behavioural adjustment agendas

In real life, we often make decisions between changing something and retaining the status quo. From shifting from one supermarket to another in order to buy cheaper groceries to resigning from a career in order to begin a doctorate, this type of decision-making expects the individual concerned to choose between continuing with his/her existing behaviour and replacing it with a new behaviour. At the same time, at the collective level, group members and citizens may also make binding decisions which require them to alter certain of their own behaviours. For example, a group of tenants in a shared flat decide whether they should restrict everyone's use of heating, or a group of drivers decide whether or not to impose a charge for driving at certain times in their city. These are decision-making instances with behavioural adjustment agendas, which are very common in collective environmental decision-making.

How does cognitive dissonance affect collective decision-making on these behavioural-adjustment agendas? Consider one of these agendas on whether or not to prohibit citizens from driving private cars into the city centre during rush hours (Scenario 7.3). Suppose all citizens are to make a collective decision on this agenda, and all citizens have been driving their own cars into the city centre during rush

hours. Let us identify some relevant sets of cognitions which each individual holds when he/she is making his/her decision:

Existing behaviour (B_1): This represents what the individual has been doing, for example, "I drive into the city centre during rush hours".

Existing attitude (A_1): This explains or justifies what the individual has been doing, for instance, "I drive into the city centre during rush hours because the underground, the only alternative, are very crowded".

Potential attitude (A_2): This explains or justifies why the individual should change his/her behaviour, for example, "I should not drive into the city centre during rush hours because this pollutes the environment and causes congestion".

Potential behaviour (B_2): This represents how the individual may possibly behave if his/her behaviour is changed according to A_2, for instance, "I do not drive into the city centre during rush hours".

Suppose the agenda consists of a single proposition that: "it is prohibited to drive private cars into the city centre during rush hours" (δ). There are three possible outcomes from this decision-making: (1) δ is collectively accepted; (2) δ is collectively rejected; or (3) there is no decision. For the first possible outcome, citizens would be required to change their existing behaviour and hence would no longer be able to drive into the city centre during rush hours. The second and third outcomes speak of the status quo, in which citizens would be able to 'drive as usual'. From an outcome-based perspective, each citizen, in effect, chooses between being prohibited from 'driving as usual' (B_2) and being permitted to 'drive as usual' (B_1). B_1 applies to all citizens in the current state of the world (or 'original state', S_1). On the other hand, B_2 does not apply to any citizen in S_1, but does so only *possibly* after the decision-making (or in 'potential state', S_2).

In deciding on δ, it is possible that a citizen, e.g., Andy, will be faced with four conflicting cognitions. First, since, in S_1, he drives into the city during rush hours, B_1 is true. This behaviour, B_1, may have been a well-reasoned or justifiable choice all along, and if so, A_1 can be true. When he considers B_2 as in δ, an explanation or justification may come to his mind, i.e., A_2. If he finds B_2 and A_2 are false, we can predict that he will reject δ in his/her decision. In this case, there is no dissonant

cognition, since, by denying B_2 and A_2, the only remaining true cognitions are B_1 and A_1, which are obviously consistent. However, if he finds that B_2 and/or A_2 is/are true, his set of cognitions will be inconsistent, because on accepting B_2 and/or A_2 as true for S_2, this conflicts with what exists as true in S_1, i.e., B_1 and A_1. This is an instance of cognitive dissonance.

According to the cognitive dissonance theory, individuals will reduce the unpleasant feeling of inconsistent cognitions by changing their attitudes rather than their behaviour, since the former sets of cognitions are less reluctant to change. In the case of a citizen accepting (B_1 and A_1) and (B_2 and/or A_2) as true, we can predict, based on the cognitive dissonance theory, that he/she is more likely to adjust A_1 or A_2 in order to restore consistency between cognitions.

Is A_1 or A_2 less reluctant to change? Since Andy has been behaving as B_1, A_1 is necessary for supporting B_1 which already exists in S_1. On the other hand, he has not been behaving as B_2, and A_2 is not necessary for supporting any behaviour in S_1. Before Andy makes a decision on δ, he is situated in S_1 instead of S_2, and hence we infer that it is easier for him to change A_2 rather than A_1. There are many examples concerning how Andy may modify A_2 as A_2', such that A_2' will be consistent with other cognitions, such as the following:

> **Conditionalising A_2:** "I should not drive into the city centre during rush hours *as long as* the underground, the only alternative, are *not* very crowded."

> **Denying the significance of A_2:** (1) "I *can* drive into the city centre during rush hours because it *is not true that doing so* pollutes the environment and causes congestion."; or (2) "I *can* drive into the city centre during rush hours because, *even if doing so pollutes the environment and causes congestion, it will not be that serious*."

> **Denying responsibility for A_2:** "I *can* drive into the city centre during rush hours because, *even if doing so severely pollutes the environment and causes severe congestion, it is not my responsibility at all*."

The list of examples above is not exhaustive. On accepting either of these versions of A_2', Andy may reject B_2 as false, so that the remaining sets of cognitions, A_1, B_1 and A_2', are mutually consistent. In this way, we can predict that, in S_1, Andy will find

that B_1 is still true and then reject δ.[134] Figure 7.1 summarises the attitude change as predicted by the cognitive dissonance theory as in Scenario 7.3.
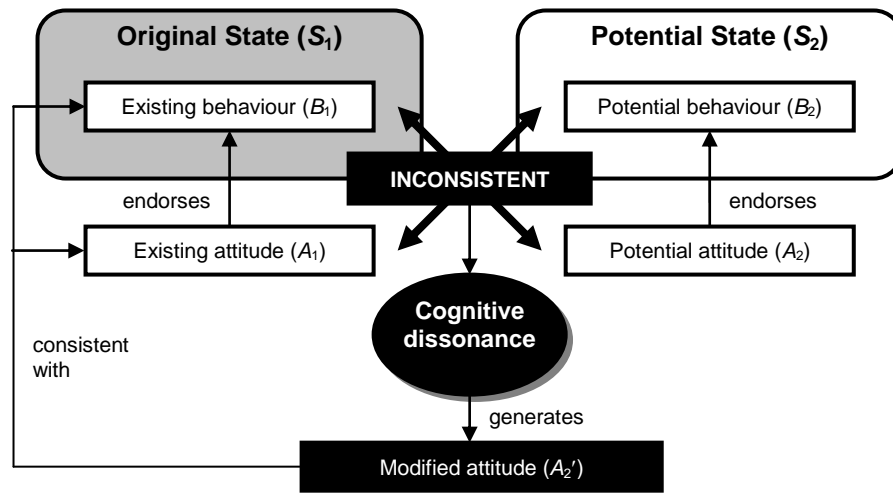

Figure 7.1: Cognitive dissonance and the resulting attitude change as predicted by the cognitive dissonance theory as in Scenario 7.3

Cognitive dissonance and the epistemic quality of democratic inputs

How does the attitude change as such undermine the epistemic quality of democratic inputs? According to the Condorcet jury theorem, one justification for democracy (in the form of aggregation using simple majority rule) is that it produces good or correct decisions. This depends essentially on the quality of inputs into democracy, and the Condorcet jury theorem is valid only if its competence assumption holds. It is perfectly possible for each individual, when deciding on the behavioural-adjustment agendas, to be sufficiently competent that, as in the competence assumption of the Condorcet jury theorem, he/she is more likely to make a correct than an incorrect decision.

However, the attitude change as predicted by the cognitive dissonance theory challenges the competence assumption in the sense that it does not hold generally for decision-making scenarios with behavioural-adjustment agendas. This is because, for these agendas, the decision that each individual makes may not reflect his/her competence, but may be a result of reducing inconsistency between his/her cognitions. For example, in Scenario 7.3, Andy may well be able to identify that it is correct to both accept B_2 as true and decide to accept δ. Nevertheless, if it turns out

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[134] Another possibility is that Andy abstains from deciding in this situation.

that, as predicted by the cognitive dissonance theory, he modifies A_2 to A_2' in order to make his cognitions consistent, B_2 may be rejected and he may, instead, decide to reject δ. As a result, he will make an incorrect decision despite the fact that he is able to identify the correct one.

In this way, individual competence does not necessarily fall into the range between 0.5 and 1 as assumed by the Condorcet jury theorem. Instead, it is subject to the probability that the *accepted* state of the world is true. For instance, given Andy decides to reject δ, his competence is equivalent to the probability that δ is false. The latter probability, however, varies across different circumstances, which can theoretically be anywhere between 0 and 1. Therefore, the competence assumption of the Condorcet jury theorem is valid only if we can verify that the probability of the state of the world accepted by individuals is between 0.5 and 1. Otherwise, it remains questionable whether individuals will submit democratic inputs which are more likely to be correct than incorrect as long as they are exposed to the effect of cognitive dissonance when making decisions on behavioural-adjustment agendas.

7.4   Constraints of institutionalising (environmental) deliberative democracy

What does the effect of cognitive dissonance on the epistemic quality of democratic inputs imply for the design of (environmental-) *deliberative*-democratic institutions? From one perspective, deliberation may, in principle, be useful for identifying instances of cognitive dissonance. This is because, through reasoned debate and discussion, any inconsistency in an individual's attitudes and/or behaviour can be revealed and be made more salient to him/her. For example, by deliberation, Andy, as in Scenario 7.2, may recognise that his attitudes about environmental protection (i.e., α and β) are (practically) inconsistent with his behaviour of driving (i.e., χ) – a fact of which he is not even aware in the first place.

The point, then, becomes *how* individuals react, after deliberation, in order to reduce the dissonant feeling of inconsistent cognitions *when making collective decisions*. If deliberation, or the decision-making process as a whole, is channelled in an appropriate way such that individuals are motivated to accept revised attitudes and/or behaviour which correspond to the truth, then a deliberative-democratic institution as such is a desirable truth-tracker.

As demonstrated in Chapter 5, deliberative democracy may take the form of a DTA institution employing both deliberation and post-deliberation aggregation. A prominent democratic aggregation mechanism is simple majority rule. As argued, the competence assumption of the Condorcet jury theorem determines whether a DTA institution with simple majority rule can be justified from the epistemic perspective. If, for behavioural-adjustment agendas, individual competence, p, can theoretically fall into the range between 0 and 1 instead of between 0.5 and 1, then the probability of a correct collective decision (P_n) will, accordingly, increase (when p is between 0.5 and 1), decrease (when p is between 0 and 0.5) or stay the same (when p is 0.5) as the number of individuals increases. Here, the epistemic performance of a DTA institution with simple majority rule relies crucially on the epistemic quality of individual decisions.

How does this epistemic pitfall of majoritarian aggregation on behavioural-adjustment agendas constrain the design of (environmental-) deliberative-democratic institutions? Recall the three desiderata for a good DTA institution for (environmental) decision-making, as outlined in Sections 7.1 and 7.2, i.e., practicability (P), universal agendas (UA) and epistemic performance (EP). Bearing in mind the time-and-size and non-decision challenges to deliberation, in order to satisfy desideratum (P), we may adopt Goodin's proposal of reflective democracy. In this, deliberation will predominately take the form of internal reflection in the mind of each individual, and there will be a democratic aggregation process, e.g., (private) voting, to resolve any disagreement straight after the 'internal-reflective' deliberation. This is the 'reflect-and-vote arrangement' (RAVA) of (environmental) deliberative democracy.

A possible problem with RAVA is that, by channelling deliberation as an internal mental process, the whole decision-making process will be rendered sensitive to the effect of emotions on individuals' minds. This is where cognitive dissonance may take a role in shaping individual decisions in (environmental) deliberative democracy. For example, when reflecting upon δ in Scenario 7.3, one may, through imagination, put oneself in the shoes of future generations and think about how the air pollution caused by driving will impair the latter's well-being. Nevertheless, such internal deliberation does not preclude the possibility that individuals will eventually compromise such reasons in favour of emotions simply for the sake of restoring the consistency of their sets of cognitions. Furthermore,

individuals may also prioritise their own perspective or need over those of others.[135] With this shortcoming, it is reasonable to suspect that such 'internal-reflective' deliberation is subject to the effect of cognitive dissonance.

At the same time, desideratum (UA) demands that (environmental) deliberative democracy should remain applicable to any type of agenda, including behavioural-adjustment agendas. However, if (environmental) deliberative democracy is applied to behavioural-adjustment agendas, and it is possible or even likely that cognitive dissonance may undermine the epistemic quality of individual decisions after internal reflection and (private) voting, then it is questionable whether desideratum (EP) can also be satisfied.

This is because, according to the Condorcet jury theorem, simple majority rule (employed as the decision mechanism following deliberation) performs well in the epistemic sense only if individuals are more likely to make a correct than an incorrect judgment. On the other hand, as argued above, we have reasons to believe that, due to the effect of cognitive dissonance, individuals may not be sufficiently competent when making decisions on behavioural-adjustment agendas. Thus, there are tensions between the three desiderata for a good DTA institution for collective (environmental) decision-making.

Therefore, in order to construct a desirable DTA institution, we must mitigate the tensions between the three desiderata. This can be achieved by adopting one (or more) of the following escape routes:

(1) Relaxing practicability (P): If (environmental) deliberative democracy does not tackle the time-and-size and non-decision challenges, instead of taking the form of a RAVA as Goodin recommends, it may consist of only 'external-collective' deliberation and a post-deliberation aggregation procedure becomes unnecessary. In this case, we may be able to reduce the emotional effects on individuals by asking them to articulate and justify their decisions in a public setting. In this way, individuals cannot simply adjust their cognitions in a private manner, but what they decide will be, instead, subject to scrutiny by others. This directs individuals to decide on the basis of reasons and justifications rather than according to the levels of ease in changing certain sets of cognitions. Besides, as discussed in Section 7.2, with

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[135] As a matter of fact, Goodin (2003) does recognise similar dangers of internal deliberation due to "the obvious absence of an insistent 'other' who is pressing her perspective upon you" (p. 183).

deliberation alone, the whole decision mechanism is equivalent to unanimity rule, and performs well only in avoiding incorrect collective decisions.

One obvious downside of this approach, nevertheless, is that, without taking into account the time-and-size and the non-decision challenges, an (environmental-) deliberative-democratic institution as such is far from practically feasible for application to decision-making in large-scale mass societies. As Goodin argues, it is virtually impossible to administer any 'external-collective' deliberation among a citizen group of considerable size in a truly democratic and deliberative manner. Besides, there will also be no collective decision until a universal consensus is reached among individuals, which speaks of a practical drawback that decisions are likely to be unavailable when individual opinions remain diverse even after deliberation. Moreover, since the decision mechanism is equivalent to unanimity rule, it always underperforms simple majority rule and even dictatorship in identifying correct decisions, and hence deliberation without aggregation is not favourable in terms of truth-tracking. Given the empirical fact of pluralism in environmental politics, as well as the significance of epistemic performance in terms of identifying correct decisions, (environmental-) deliberative-democratic institutions of this kind are unlikely to be desirable.

(2) Relaxing universal agendas (UA): If (environmental) deliberative democracy is only applicable to a restricted set of agendas for collective decision-making, excluding behavioural-adjustment agendas, then it is possible to avoid the potential effect of cognitive dissonance on the epistemic quality of decisions.

However, many environmental issues do require collective decisions on behavioural adjustments. Common examples include whether or not to prohibit the distribution and use of plastic bags or whether or not to coerce citizens to classify and recycle waste before disposal. Without such decisions, it is impossible to take any collective action to resolve these issues. Unless we are developing (environmental-) deliberative-democratic institutions for making collective decisions merely on specific issues, this option is not very appealing in general.

(3) Relaxing epistemic performance (EP): If truth-tracking is not, after all, a crucial property of (environmental) deliberative democracy, then

we may disregard the problem of epistemic pitfall altogether as long as the deliberative procedures, rather than the deliberative outcomes, remain unaffected by cognitive dissonance. However, it is far from clear how appealing this approach is in general. On the one hand, the recent development in democratic theory has seen a growing emphasis on the epistemic values of, and justifications for, (deliberative) democracy (see, for example, Cohen, 1986; Estlund, 1993; Gutmann and Thompson, 1996; Gaus, 1997; Goodin, 2003; Estlund, 2008). It appears that the bottom line consensus among these accounts is that the epistemic aspect of (deliberative) democracy is, from a normative point of view, not trivial.

On the other hand, in many environmental decision-making instances, such as when deciding whether or not to build a nuclear power plant in a certain area, whilst valuing inclusiveness as well as equal participation and influence in the decision process, people may also strictly prefer a right decision to a bad decision for the sake of protecting the interests of future generations or simply avoiding devastating outcomes. If this is the case, it remains hard to dismiss the very notion of epistemic performance purely for the purpose of circumventing the epistemic pitfall caused by cognitive dissonance.

As we can see, it is difficult to institutionalise (environmental) deliberative democracy as a DTA which simultaneously satisfies all three desiderata, i.e. practicability (P), universal agendas (UA) and epistemic performance (EP). Having said that, a way out can be found by relaxing any one of these desiderata. For small-scale deliberation with relatively few individuals which focuses more on gathering opinions than making decisions, we may relax practicability (P). For deliberation which does not involve any 'conflict of interests' for decision-makers (such as behavioural adjustments for decision-makers themselves), we may relax universal agenda (UA). Lastly, for deliberation which focuses more on the (democratic) process than the epistemic quality of decision outcomes, we may relax epistemic performance (EP). As to which of these desiderata should be relaxed, it largely depends on the corresponding price that we are ready to pay.

7.5   Concluding remarks

In this chapter, I have demonstrated, through the lens of cognitive dissonance, a case of epistemic pitfall in (environmental-) deliberative-democratic institutions. In Section 7.1, I outlined the time-and-size and non-decision challenges, and explained why Goodin's (2003) reflective democracy can tackle both challenges. I then discussed, in Section 7.2, why the Condorcet jury theorem is relevant to assessing the epistemic performance of (environmental-) deliberative-democratic institutions. In Section 7.3, I introduced the theory of cognitive dissonance and showed how cognitive dissonance undermines the epistemic quality of democratic inputs on behavioural-adjustment agendas. I then identified, in Section 7.4, several escape routes which we may take in order to mitigate the tensions between the three desiderata for (environmental-) deliberative-democratic institutions, i.e., practicability (P), universal agendas (UA) and epistemic performance (EP). However, which of these escape routes is more desirable for constructing deliberative-democratic institutions for collective (environmental) decision-making remains an open question.

Here, we notice an issue which extends beyond (environmental) deliberative democracy and can possibly be developed into further research. Given Goodin's (2003) caveat that 'external-collective' deliberations are not feasible in large-scale societies nowadays, what other innovative measures may be taken to mitigate such a problem of epistemic pitfall? One suggestion would be to make the whole collective decision-making process as transparent as possible so that individuals are prepared to be questioned about the grounds for their decisions. With deliberation, this may proceed with a random selection of individuals who will be asked to explain and justify their own decisions in a public setting (see also Goodin, 2003, pp. 222-223). With the subsequent aggregation, secret ballots may be replaced with another more 'public' arrangement such as a show of hands or rising vote.

An innovative measure would aim to channel deliberation, or the decision-making process at large, appropriately so that individuals were motivated, instead of changing attitudes rather than behaviour (as predicted by the cognitive dissonance theory), to accept revised attitudes and/or behaviour that correspond to the truth. In this way, we would be able to construct deliberative-democratic institutions which are desirable for truth-tracking and, at the same time, applicable to behavioural-

adjustment agendas. However, it remains debatable whether such an innovative measure is in any sense more feasible or desirable than the classical form of face-to-face deliberation, as advocated by a number of deliberative-democratic theorists throughout the last three decades.

CONCLUDING REMARKS

Can democracy secure environmental sustainability? Undoubtedly, this question matters, given the increasing importance we attach to both democracy and the environment. Moreover, the question is not a trivial one. In this capitalist economy, we constantly see the environment being sacrificed to other, more salient values such as development, consumption, convenience and resistance to lifestyle change. In any democratic process, the decisions we make may well be detrimental to the environment. We only need to think of urban sprawl, non-recyclable waste, the energy crisis, the water crisis and air pollution – all serious problems which may remain unresolved in any contemporary democracy.

Part I of this thesis dealt with the first level of the question. In Chapter 1, I outlined the dilemma of green democracy which determines whether democracy can, in principle, secure environmental sustainability. Consideration of this dilemma demonstrates that it is logically impossible to construct an environmental-democratic institution which satisfies simultaneously three plausible demands: (1) that institutions are robust to the empirical fact of pluralism (i.e., robustness to pluralism); (2) that they are responsive to individual opinions (i.e., consensus preservation); and (3) that they also nonetheless respect environmental sustainability (i.e., green outcomes). We may, however, relax one of the three demands in order to avoid the dilemma, and a number of proposals are available for this purpose. In Chapters 2, 3 and 4, I discussed these proposals in detail and evaluated their desirability in terms of procedure and outcome. The conclusion of Part I is that, as long as the dilemma of green democracy is resolved, democracy *can* secure environmental sustainability, meaning that environmental-democratic institutions are at least logically possible.

Part II of the thesis has focused on the second level of the question, i.e., *how* we can construct good environmental-democratic institutions. I have considered some substantive issues of institutional design inspired by ideas drawn from social choice theory (i.e., the discursive dilemma), cognitive/computer science (i.e., distributed cognition) and psychology (i.e., cognitive dissonance). In Chapter 5, I have shown how the discursive dilemma and the normative ends of deliberation constrain the diversity of admissible inputs for post-deliberation aggregation, in a 'deliberation-then-aggregation' (DTA) institution. In Chapter 6, I have demonstrated

how we can construct, on the basis of distributed cognition, a DTA institution for Specialist Environmental Democracy (SED) which reconciles the perennial tension between decisions by experts (i.e., technocracy) and decisions by ordinary people (i.e., democracy). In Chapter 7, finally, I have examined how cognitive dissonance undermines the epistemic quality of deliberative decisions, and explained why this challenges the design of a practicable DTA institution for collective (environmental) decision-making.

To understand the big picture of my thesis from another perspective, consider a very simple analogy of a kitchen blender. We know that the food eventually produced from a blender depends on the ingredients added. To make pure tomato juice, for example, we add only tomatoes, which are then crushed by the blade. Suppose, for the purpose of making juice, the blender takes all kinds of crushable fruits and vegetables as ingredients. Also, the blade functions in such a way that all, and only, the ingredients added are crushed and turned into juice. Can we therefore guarantee that celery juice will be produced? Evidently, this is not the case, since the ingredient(s) may not be celery but may be, say, carrots or oranges.

Using a blender for juice-making is similar to making collective environmental decisions through democracy. Like democracy, a blender is a *procedure* which (1) accepts different fruits and vegetables as long as they are crushable and (2) has a blade that turns the ingredient(s) added into juice of those same fruits and vegetables. If we also require that (3) the blender must always produce only a particular *outcome*, say celery juice, it is easy to spot the tension between the two former procedural conditions and the output condition. Whilst conditions (1) and (2) respectively mirror 'robustness to pluralism' and 'consensus preservation' in green democracy, condition (3) is analogous to 'green outcomes'.

Setting out the logical space for environmental-democratic institutions, as in Part I, is like thinking about the technical possibility of creating a blender. We may relax (1) by installing a filter at the top of the jar which removes all fruits and vegetables except celery (cf. (exogenous) domain restrictions). We may, alternatively, relax (2). This can be done by dividing the jar into two levels, in which any ingredients may be added into the upper level, whereas celery is preloaded into the lower level; the blade only crushes the celery at the lower level, hence producing only celery juice (cf. eco-authoritarianism and substantive environmental rights). Lastly, we may relax (3), so that the blender is no longer expected to produce only

celery juice all the time (cf. pragmatic (green) democracy). Here, the tension between procedure and outcome, as in green democracy, is overcome, which is a pre-requisite for creating any technically feasible blender. Furthermore, we should consider some substantive issues concerning the specific design of the blender, which is similar to the case of environmental-democratic institutions as in Part II.

Let me briefly summarise the main contributions of this thesis. I have constructed, using the most basic modelling technique in formal theory, an organising principle, i.e., the dilemma of green democracy, which sets out a logical framework for examining the relationship between democracy and environmental sustainability. No previous literature, in either democratic theory or environmental politics, has paid sufficient attention to the logical possibility of or constraints on achieving environmental sustainability through democracy. The present clarification not only enriches our conceptual understanding of both values, but also informs us about the necessary *trade-offs* we have to make in constructing a *practicable* environmental-democratic institution (cf. manufacturing a technically feasible blender).

In terms of methodological innovation, I have demonstrated how social choice theory, as a *formal* theory, together with democratic theory, can serve as an integrated analytical framework for *normative* discussion of the substantive design of environmental-democratic institutions (cf. the specifics of how a blender should be designed). The discursive dilemma drawn from social choice theory, for example, constrains what the *normative* ends of deliberation can be for DTA institutions. The model of distributed cognition suggests how to reconcile the two *normative* values of procedural fairness (as in democracy) and epistemic performance (as in technocracy). The issue of cognitive dissonance, at the same time, reveals the tension between three *normative* demands for (environmental-) deliberative-democratic institutions. It is far from common, at least in the literature of green political theory, for formal theory to be applied in this way to the institutional design of collective *environmental* decision-making.

Furthermore, I have made use of two inter-disciplinary ideas from cognitive/computer science (i.e., distributed cognition) and psychology (i.e., cognitive dissonance) in order to examine the design of (environmental-) democratic institutions. This sheds light on thinking about two recurrent issues in politics (or political theory), i.e., how democratic institutions can be designed to realise

collaborations between experts and ordinary people in decision-making; as well as how deliberation can best be arranged in order to minimise any emotional effect on decision-makers which may undermine the epistemic quality of democratic decisions.

Looking ahead, this thesis has potential to be developed into further research bridging empirical and theoretical studies of politics. To give just one example, consider the model of distributed cognition (or Specialist Environmental Democracy, SED) as discussed in Chapter 6. SED informs us, in theory, about how we can construct decision-making institutions in such a way that science and democracy co-exist and complement each other and contribute to better policy making. This issue is becoming increasingly prominent nowadays (Fischer, 2009; Keller, 2009; Ascher, Steelman and Healy, 2010).

Here, we may be interested in the application of SED as well as in its empirical performance. How can SED be operationalised as an innovative means of democratic participation, for example to supplement the method of Deliberative Mapping as touched on in Chapter 6? How effective is SED in solving environmental problems in the empirical world? How can SED be extended to cover decision-making on other policy issues in which there are similar, or even deeper, divides between the opinions of experts and those of citizens? These questions are not only significant for academic enquiry but also of great value to practitioners seeking to promote and/or experiment with the widening of citizens' participation in public policy making, particularly on issues which are complex, uncertain and controversial.

While the exact agendas for any future research (such as that mentioned above) may, like environmental decision-making, be more complex than we think and have uncertain outcomes, one fact is in all senses beyond controversy: there are (logical) constraints and trade-offs in building any (environmental-) democratic institutions. This proposition is fitting and not trivial for understanding whether, and if so why and how, democracy secures environmental sustainability. Given the countless variables in any democracy, as in the environment, it remains paradoxical to claim that a decision outcome 'in a particular colour' can be guaranteed by a particular democratic procedure – which is, perhaps, as paradoxical as saying:

Any customer can have a car painted any colour that he wants so long as it is *black*;[136] or

A blender can turn any crushable ingredients into juice as long as they are *green*.

Can we *ever* guarantee environmental sustainability as an outcome of democracy? As with the black car or the celery juice in the cases above, I think we know the answer.

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[136] This remark was made by Henry Ford about the Model T in 1909 (Ford, 1922, pp. 71-72; emphasis added); see also Chapter 1.

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