

# Democracy's Wisdom: An Aristotelian Middle Way for Collective Judgment

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**A** satisfactory model of decision-making in an epistemic democracy must respect democratic values, while advancing citizens' interests, by taking account of relevant knowledge about the world. Analysis of passages in Aristotle and legislative process in classical Athens points to a "middle way" between independent-guess aggregation and deliberation: an epistemic approach to decision-making that offers a satisfactory model of collective judgment that is both time-sensitive and capable of setting agendas endogenously. By aggregating expertise across multiple domains, Relevant Expertise Aggregation (REA) enables a body of minimally competent voters to make superior choices among multiple options, on matters of common interest. REA differs from a standard Condorcet jury in combining deliberation with voting based on judgments about the reputations and arguments of domain-experts.

**I**f a democracy is to be robustly sustained over time, public decisions must respect democratic values, while advancing citizens' interests. Democracy is a sham if meaningful decisions, leading to significant public outcomes, are not made by free citizens, secure in their dignity, acting as political equals (Ober 2012). But legislative process must do more than express values. It must seek to achieve outcomes aligned with citizens' interests in, for example, security, fair rules, and social welfare. All other things being equal, anticipated outcomes are more likely to be achieved when legislation is predicated on knowledge about relevant features of the world. Since antiquity, political theorists have asked whether a political regime can be at once *democratic* and *epistemic*. Can policy-making processes express democracy's core values and serve citizen's interests when decisions are based on well-justified beliefs, rather than ill-founded popular opinions? How a democratic community might employ knowledge in choosing among alternatives is a question of institutional design that concerned classical Greek political theorists and that remains central for contemporary political scientists (Callander 2011). It is a pressing question, not least because it exceeds the bounds of the state. Universities, business firms, NGO's, federations, and transnational agencies all confront the question of how many individuals, who share certain interests in common, can choose wisely among available options.<sup>1</sup>

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<sup>1</sup> In addition to the core values of liberty, equality, and dignity, democratic theorists sometimes include values of (among others) auton-

omy, reciprocity, fallibility, experimentalism, transparency, and practical reason: Brettschneider 2007; Christiano 2011; and works cited in what follows. Expression of democratic values in majoritarian decision processes: Waldron 1999; Schwartzberg 2007. Important work on epistemic democracy includes Cohen 1986, 1996; List and Goodin 2001; List 2005; Bovens and Rabinowicz 2006; Anderson 2006; Page 2007; Estlund 2008; Furstein 2008; Fischer 2009; Schwartzberg 2010; List and Pettit 2011 (chapter 4); Landemore and Elster 2012. A realistic theory of epistemic democracy ought to be incentive compatible (Ober 2008: 5–22) but no formal model is offered here.

Plato (in the *Republic*), along with other ancient and modern critics, argued that democracy's commitment to liberty and political equality necessarily leads citizens to pursue arbitrary desires rather than real interests, and to make choices based on false opinion rather than knowledge. The critics conclude that democracy is inherently anti-epistemic and that only a non-democratic regime could make policy favorable to people's real interests (Roberts 1994; Ober 1998). If they are right – if, in contrast to a well-ordered epistemic autocracy, democracy's core values render a democratic collectivity inherently incapable of employing knowledge to make policies leading to favorable outcomes – we must ask whether sustaining values justifies the cost of, for example, less security, less fair rules, and less social welfare. It obviously would be better for those who cherish democratic values if that question were moot.

The promise of epistemic democracy is that, under the right conditions, a process of decision-making that expresses and sustains democratic values can do better than making random choices among policy options – and thus can promote the interests of citizens by achieving relatively favorable outcomes. If that is the case, and if no non-democratic epistemic process can be shown to do better, the presumptive normative benefits of liberty, political equality, and civic dignity need not be traded off against the expected costs of inferior policy. In sum, if epistemic democracy's promise were fulfilled, we could add interest- and-outcome-based reasons to value-based reasons for preferring democracy to "epistocracy."<sup>2</sup>

<sup>2</sup> Estlund (2003, 2008), who coined "epistocracy" as a term for rule by experts, develops a moral argument against it. My argument suggests that the argument for epistocracy goes wrong at the outset because

One enabling condition for epistemic democracy is participation in decision-making by citizens who attend to relevant sources of knowledge, to true expertise and genuine experts. Yet how can attention to experts avoid devolution into rule *by* experts, thus leading to the eclipse of political equality, and at least potentially to the eclipse of liberty and dignity as well? The question of whether a democracy can make appropriate use of diverse forms of expertise, while preserving its core values, has concerned political theorists and practitioners since antiquity. It remains an issue for contemporary theorists. Philip Pettit, for example, argues for a deliberative constitutional order in which “authorial” power to legislate lies with depoliticized deliberative bodies possessing appropriate professional expertise, while ordinary citizens are reduced to an “editorial” role (Pettit 2004: 57–62; contra: Urbinati 2012). Democracy’s relationship to expertise is a live issue in current policy debates, with critics contending that democracy’s anti-epistemic character renders it unequal to, for example, the challenge posed by long-term climate change (Shearman and Smith 2007).

This article seeks to define an appropriate role for expert knowledge in a robust democracy in which legislative authority is retained by citizens. It does so by drawing upon two promising trends in democratic theory: adapting Greek political theory (e.g. Wilson 2011) and political practice (e.g. Schwartzberg 2010) to contemporary purposes, and seeking a productive middle ground between deliberative and aggregative approaches to democratic process (e.g. Dryzek and List 2003). Borrowing from Aristotle’s discussion of the “wisdom of the many” and from ancient Athenian political practices, I suggest one way that the promise of epistemic democracy might be fulfilled through appropriate institutional design.

The following section (1) establishes the preconditions for epistemic democracy, notably the identification of common interests and relevant domains of expertise. The next section (2) compares salient features of deliberation and independent guess aggregation with Relevant Expertise Aggregation (REA) – a “middle-way” system for making good decisions among two or more options on issues with multiple relevant criteria. In REA the best overall choice is a function of how the options score in terms of the criteria. Each criterion is defined as a relevant domain of expertise. Options are ranked by experts in each domain, or by mass voting based on recommendations of multiple experts. The third section re-analyzes the well-known “wisdom of the many” passage in Aristotle’s *Politics* (3.11), arguing that it is a compressed account of REA. The fourth section employs a passage from Aristotle’s *Poetics* to fill out a non-democratic model

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it wrongly supposes that, because there *are* experts in domains relevant to politics there are *also* general experts in politics (as opposed to relatively competent political leaders). For a meta-analysis of the vast “democracy and economic performance” literature, see Doucouliagos and Ulubaşoğlu 2008, who conclude that real-world modern democracies do no worse on this outcome-measure than non-democracies.

of REA under complete rules. In this first, epistocratic, model, the best choice among three options is a function of the aggregated relevance-weighted rankings of individual experts who are assumed to be infallible. The fifth section explains how expanding the model to include mass voting solves the problem, raised by Aristotle, of fallible experts – and thereby brings REA out of epistocracy into the realm of epistemic democracy. The sixth section introduces a less stylized model of REA under incompletely specified rules. The problems and potential of this version are illustrated by reference to decision-making in democratic Athens in 481 BCE. The final section (7) concludes by suggesting that a group employing REA might improve its performance over time through learning, and sketches the kinds of empirical studies that will be required if the theoretical account of democracy’s wisdom offered herein is to be tested.

## INTERESTS, KNOWLEDGE, EXPERTS

How ought a democratic process to make decisions, if it is to sustain democracy’s core values and promote citizen interests? One influential answer is to aggregate the preferences (over representatives or policies) of free citizens by counting their equally weighted votes. Robert Dahl (1989, 1998), among others, has argued, against Plato and other epistemic regime theorists, that democratic values are preserved, and citizens’ interests advanced, when policy is set by a majority of voters whose preferences express their own opinions about their own best interests. Dahl’s approach preserves liberty, political equality, and dignity by asserting that each individual voter is the best (even if necessarily imperfect) judge of his or her own interests, and that a majority of such individually-chosen interests, expressed as equal votes, deserves to be established as state policy. Yet the majority’s preferences, even if they do track the real interests of the majority, will often fail to reflect the interests of *all* citizens. It is because the preferences of a majority might ignore or harm the most basic interests of individuals or of a minority that, in liberal democracies, certain fundamental interests are legally protected as rights.

Classical theorists approached the matter of preserving values and fostering interests somewhat differently. Aristotle regarded advancing the special interests of a majority in a democracy (or of an empowered minority in an oligarchy) as unjust, if it came at the expense of promoting common interests. He supposed that a just community would identify common (rather than partial/factional) interests and, by appropriate use of practical wisdom (*phronēsis*), would select policies most likely to advance those interests. Political decision-making, for Aristotle, was an epistemic endeavor in that it was meant to discover the best answers to questions of appropriately-shared concern. If we are willing to accept the common (although not universal) thoughts that (1) people do have real interests (and not *merely* preferences) and (2) that some interests are in fact shared by some members of a community, there is,

by extension, no reason to reject *a priori* the possibility that certain interests (e.g. in security, fair rules, welfare) could be so widely shared as to be reasonably described as commonly held. Moreover, one need not embrace Aristotelian eudaemonism to regard pursuing certain common interests as a normatively choice-worthy political goal, or to suppose that practical wisdom is equal to the task of identifying certain interests as shared. For the purposes of this article, a superior common-interest choice is one that selects the available option that, all things considered, best advances an interest shared by the members of a community.<sup>3</sup>

I do not propose that we follow Aristotle in assuming that politics can or ought to be reduced to a search for the best answers about common interests and their advancement: Many political matters involve hard choices among conflicting social values; many other matters concern the interests only of certain persons. Yet it seems implausible to say that politics *never is*, and *never ought to be*, concerned with interests that are reasonably held to be shared. Democratic politicians, in antiquity (Ober 1989) and modernity alike, frame proposals as promoting the common interest; their rhetoric is not empty insofar as it acknowledges a shared conviction that addressing common interests is at least part of what politics ought to be about. Common interests might, hypothetically, be identified by consensus, but, for my purposes, consensus is unnecessary. Majoritarian mechanisms may be employed to identify and advance a common interest, so long as the majority decision actually represents a superior common-interest choice, as defined in the previous paragraph. It is implausible to suppose that majority votes always (or often) accurately identify or advance common interests. It is sufficient for my argument that certain interests are sometimes shared and, in such cases, there is such a thing as the better policy. Although common and partisan interests can never be fully disentangled, focusing on shared interests limits the subjectivity of decision-making and thereby allows the performance of decision-making groups to be evaluated (Yates and Tschirhart 2006).

To be plausible on the face of it, any approach to epistemic democracy must address the challenges of transitivity (and thus of cycling), collective rationality, and elite control. Options, in order to have stable

outcomes, must be transitively ordered, such that if  $A > B$  and  $B > C$  then  $A > C$ .<sup>4</sup> Collective decisions made through the participation of many individuals, including decisions about common interests, can be regarded as the rational judgment of a collective agent without reference to metaphysically mysterious conceptions of agency only when decisions are made under the right conditions (List and Pettit 2011). Finally, by definition, epistemic democracy must decide matters democratically, avoiding capture by elites. I will hope to show that Relevant Expertise Aggregation, the “middle-way” decision-making process described here, addresses the challenges of transitivity, agency, and elite capture as well or better than deliberation and independent guess aggregation in their conventional forms.

Insofar as democratic politics is a means for choosing which available option best serves a shared interest, it involves the use of knowledge (accurate information, true beliefs) for discovering the best option. Given indeterminacy and contingency, this cannot mean “identifying the approach that infallibly achieves a common interest.” It must mean instead, “choosing the option among available alternatives that has the best chance, all things considered, of advancing a common interest.” Two fundamental premises of epistemic approaches to democracy are that (1) there *are* better options, in that the chances of a good outcome are better if that option is chosen, and (2) decision-makers can, under the right conditions, identify better options.<sup>5</sup>

Options are likely to be better insofar as they take fuller account of relevant facts about the world. Reality-tracking is valued (in this context) because of its consequences: All other things being equal, options that take account of the relevant facts are more likely to lead to a better outcome, all things considered, than those that do not. In this article, I am not concerned with assessing the moral status of interests pursued by a democratic community (e.g. by weighing the shared interests of a community against global interests or universal human rights). Nor am I concerned with the normative value of epistemic democracy relative to, e.g., agonistic pluralism (Honig 1993; Lacau and Mouffe 2001). Nor, finally, am I concerned to show that epistemic democracies will invariably out-perform autocracies. I am concerned with designing institutional mechanisms that enable citizens in a democracy to make relatively better decisions, and thereby advance common interests, while sustaining core values.

<sup>3</sup> Aristotle on justice as a common interest in the public good: *Politics* 3.1278b20–25 with Gottlieb 2009: 201–202 n. 17. Because Aristotle supposed that there was a single, specifiable human good (Kraut 2002), “the common interest” might be taken as the truth about the human good. I propose, instead, that a common interest is identified when the preferences for a general outcome among the members of a reasonable decision-making group (i.e. a group in which preferences track interests) seeking a public (non-exclusive) good are well-aligned and when the dignity of each and all is respected. Here, reasonably-held interests are taken as the functional equivalent of real interests and “reasonable” refers to the level of practical wisdom (reflection on what ought to be done, giving due attention to relevant facts, causes, and effects) assumed to pertain in the decision-making body of ordinary persons, discussed in the third section. Cf. Pettit 2004: 59, on common interests as “public valuation.” On the challenge posed by social choice theory to democratic rationality, see note 4, with discussion in second section, below.

<sup>4</sup> On cycling as an issue in epistemic democracy, see List and Goodin 2001; Dryzek and List 2003; List 2011; Elster 2011, with work cited.

<sup>5</sup> As Callander (2011) notes, decision-makers can never be sure, *ex ante*, that they have chosen well, nor can they be sure, *ex post*, that an outcome came about because of their choice. But, as he demonstrates, this need not obviate the hope of identifying better options. Hawthorne (und: 5) argues that “for a wide range of philosophically respectable views [on the public good, citing Aristotle, Locke, Rousseau, Mill, Rawls] there is such a thing as the better policy in at least some cases and . . . that such views may find aid and comfort from what Jury Theorems imply about the ability of majorities to find the better policy.”

Epistemic decision-making is necessarily concerned with expertise. Experts in a given domain (say, chess masters) are more capable than others at producing a desired outcome (winning) and the probability of achieving the outcome is increased by better choices (good moves). The Callipolis of Plato's *Republic* is an example of an ideal epistemic regime in which rulers are experts. Their choices accurately track the Form of the Good and thereby produce a just society. Callipolis is, however, neither realistic nor democratic. It is undemocratic because a few experts rule without consulting the other citizens. It is unrealistic because it assumes the existence of general, architectonic political experts. The philosopher-kings are "architect-like" in their master knowledge of a blueprint that perfectly directs the actions of all those whose work (and subsidiary expertise) is necessary to create and sustain a just society. Absent a Form of the Good to which some individuals have privileged access, there is no reason to believe that such general political experts exist.<sup>6</sup>

Politics is unlike domains of endeavor in which individuals achieve true expertise (say, chess or violin playing; Ericsson 2006) in its level of complexity. There are, *ex hypothesi*, no general experts in politics because, lacking access to the Form of the Good (or some similar metaphysical resource), such experts would need to master a range of hard-to-acquire specialized expertise that exceeds the bounds of human cognitive capacity. It is, however, highly plausible to suppose that there are true experts in many domains relevant to political decision-making (Ericsson et al. 2006). Domain-experts may come to believe, wrongly, that they are general experts. The catastrophic results that can follow when political authority is ceded to domain-experts are well documented (Scott 1998). But this ought not be a reason for excluding expertise in relevant domains from democratic decision-making. The goal of Relevant Expertise Aggregation is to bring relevant domain-specific expertise into the process of decision-making without ceding political authority to experts.<sup>7</sup>

REA captures some of the ways by which better options were chosen in antiquity and are chosen in modernity. While there are epistocratic versions of REA (REA I: fourth section, below), other versions (REA II and III: fifth and sixth sections, below) are democratic in retaining the principle of equal votes and (REA III) in resisting elite capture through agenda control. REA is Aristotelian in that it is inspired by and

elaborates upon passages in Aristotle's texts. It is not fully specified in the texts but it is, I believe, a plausible extension of Aristotle's thinking on political science. An approach to collective judgment closely resembling REA II and III was, I will argue, the basis for Aristotle's celebrated claim that, under the right conditions, the many may be wise: a better judge of some matters than an excellent individual or small group.<sup>8</sup>

The conditions necessary for REA are demanding, but realistic: (1) Decision-makers addressing an issue seek the best available option. (2) The issue is divisible into parts, each of which has a specifiable (relative to other parts) relevance to the issue at question. (3) Each of those relevant parts is explicable as a domain of knowledge that can be enlightened by identifiable domain-experts willing and able to disclose private information.<sup>9</sup> Certain forms of REA require a further assumption that (4) conditions 1–3 are common knowledge in a group that exists over time such that its decisions take the form of a repeated game, and that (5) its members update beliefs about experts in overall reality-tracking ways.<sup>10</sup>

## DELIBERATION, INDEPENDENT GUESS AGGREGATION, AND MIDDLE-WAY DECISION THEORY

The primary mechanisms discussed in the epistemic democracy literature are deliberation (DEL), understood as a form of reciprocal reason-giving among citizens (Cohen 1996; Gutmann and Thompson 2004), and independent-guess aggregation (IGA), understood as a method for mathematically aggregating votes with a specified probability of being correct (Condorcet 1785; List and Goodin 2001). DEL and IGA have real-world applications. DEL has been put into practice as

<sup>8</sup> The following passages, in addition to the passages from the *Politics* and *Poetics* (sections 4, 5) and from the *Rhetoric* (notes 17, 28), support the argument that Aristotle does have in mind an approach similar to REA: *Metaphysics* 1.2.993a30-b7: no individual knows the whole of the truth, but everyone has part of it. *Parts of Animals* 1.1.638a1–12: there are two levels of proficiency in every human endeavor: true expertise and education adequate to form judgments on expert arguments; some individuals are competent to judge arguments in most domains, others only in specific domains. *Rhetoric* 1.2.1357a2–4, 1359b19–21: the goal of deliberative rhetoric is exposition of complex matters by experts to minimally competent decision-makers ("persons who cannot take in at a glance a complicated argument, or follow a long chain of reasoning") especially in the general domains of ways and means, war and peace, national defense, imports and exports, and legislation.

<sup>9</sup> Bovens and Rabinowicz (2006) compare Condorcet jury models predicated on voting on parts with voting on complex issues as wholes. Their "premise-based procedure" differs from REA in addressing only binary (yes-or-no) questions, in requiring a majority "yes" vote on each premise (domain/part), and in assuming voter independence.

<sup>10</sup> The fact that individuals hold private information relevant to decisions affects best-choice voting models in various ways, depending on the assumptions of the model: Austen-Smith and Banks 1996; Feddersen and Pesendorff 1996. The REA models would be complicated if we assume (as I have not) that domain-experts with especially valuable private information are executives, officials seeking reelection, or are subject to judicial review: see Canes-Wrone, Herron, and Shotts 2001; Fox and Stephenson 2011.

<sup>6</sup> In his early work, *Protrepticus* (fragment cited in Iamblichus, *Protrepticus* 10.54.12–56.2), Aristotle uses the architect as a model for the ideal legislator. Aristotle likewise applies an "architectonic" frame to political science (*Nicomachean Ethics* 1.2.1094a26–b7), as well as to philosophical foundations (*Metaphysics* 1.2.981a30–982b7), but in these later works he does not suggest that there is a master "architect." My thanks to Monte Johnson for calling to my attention these and other key passages in Aristotle, notably those cited in notes 8, 17, and 28.

<sup>7</sup> Dividing an issue into domains in which expertise is identifiable is described in literature on decision expertise as "the process-decomposition perspective": Yates and Tschirhart 2006: 426–2. See *ibid*: 435 on how the multiple factors involved in complex decisions will presumably render "true across-the-board decision-making expertise" in any individual "exceedingly rare."

a method of polling and for making political decisions (Fishkin 2009; Baiocchi 2005; Warren and Pearse 2008). IGA includes prediction markets (Sunstein 2007), but the primary mechanism considered here is the Condorcet jury, in which (in its canonical form) jurors make independent judgments and the likelihood of each voter choosing correctly on a binary decision is assumed to be better than half. As the number of votes increases, the majority choice is ever more likely to be correct.

In a spectrum of approaches for organizing diverse information and dispersed knowledge for the purposes of democratic decision-making, DEL and IGA, in their strong conventional forms, stand at opposite poles: DEL assumes non-strategic exchange of information and reasons, and regards that interaction as necessary for achieving better answers and outcomes. DEL values updating by decision makers, on the basis of new information and reasons offered by others, both as a means to achieving better outcomes and as an expression of the values of equality and reciprocity. Canonical forms of IGA assume voter independence – there is no pre-decision information-sharing. Independence is valued as preserving freedom of individual choice, but also because it prevents the informational cascades (group-think) and polarization (extremism) that have been associated by Cass Sunstein, among others, as inherent anti-epistemic features of deliberation (Sunstein 2000, 2002; cf. Mendelberg 2002; Mutz and Martin 2001). Pre-decision communication among decision-makers, in ways that violate the independence of their individual choices may be taken as a source of corruption (List and Pettit 2004). Yet, in the real world, choices are rarely, if ever, truly independent: The presence of opinion leaders can compromise free speech, thereby making votes dependent on a limited number of schools of thought (Ladha 1992). Moreover, jurors in a courtroom vote for guilt or innocence on the basis of the evidence they have all heard, rather than on their independent knowledge of the state of the world. If the evidence is misleading, or if jurors are incapable of assessing relevant evidence, the classic Condorcet result, in which certainty of correctness is approached as the size of the jury increases, will be weakened (Dietrich and List 2004). These considerations point to the limitations of IGA, but do not obviate its value in enabling groups to make better-than-random choices among options. Real-world IGA does not offer infallibility, but democratic theorists often value fallibility, especially when the recognition of human fallibility is conjoined with experimentalism (Schwartzberg 2008; Knight and Johnston 2011).

In some recent empirical work on decision-making (Sunstein 2007), DEL and IGA are set up as incompatible alternatives, to the detriment of DEL. By contrast, John Dryzek and Christian List argue persuasively that deliberation, rather than being incompatible with aggregative approaches to democratic decision making, actually offers a solution to the challenge posed by social choice theorists (e.g. Riker 1982), who claim that the democratic aggregation of views, interests, or preferences across individuals is “bedeviled by impos-

sibility, instability, and arbitrariness” (Dryzek and List 2003, quote: 2). Deliberation has subsequently been incorporated into work on Condorcet juries (Gerardi and Yariv 2007; Elster 2011). This article contributes to the “middle way” literature of reconciliation between DEL and IGA by drawing from ancient Greek political thought and practice.

Reconciliation is especially desirable because neither DEL nor IGA, in their canonical forms, fully suits the needs of a democratic community that must make complex, highly consequential, time-sensitive choices. IGA suffers from a democratic deficit in that it is predicated on agendas (issues and options) that are set exogenously. Lacking the opportunity to deliberate, the voters constituting the group cannot themselves determine the issues on which choices must be made, or the options from among which they will choose. Nor can they, as a group, establish rules governing issue selection or the option menu. The issues and available options must ordinarily be presented to voters by some external authority.<sup>11</sup> Insofar as it sticks by its own premise of voter independence, IGA therefore comes with external (presumptively elite) agenda control built in.

Under DEL, issues and options may be set by an external authority. An example is a deliberative poll in which the issue and options are set by the authorities commissioning and/or conducting the poll (Fishkin 2009). But a group employing DEL also has the capacity to set its own agenda: It can decide what issues to take up, and what options to choose among. It can establish rules governing what issues will be taken up when, and what options will be available on a given issue. Strong forms of DEL require equality of deliberative opportunity and are committed to rules of neutrality. As such, even when it does not require complete consensus, the conventional form of DEL lacks a mechanism for closure (when have enough reasons been offered to holdouts?), and thus cannot offer a practical way forward in time-sensitive decision contexts without violating its own premises.

In real-world democracies, citizens must be able to set their own agendas (or democratically establish rules for doing so) and must make decisions under time constraints. Middle-way theory potentially answers those demands, by relaxing certain assumptions on which DEL and IGA are predicated. REA may be thought of as a variant of DEL since some versions of DEL do incorporate voting (Fishkin 2009; Warren and Pearse 2008). Or it may be regarded as a variant of IGA, since some Condorcet jury models do allow communication among voters (Gerardi and Yariv 2007), and allow for division of issues into parts (Bovens and Rabinowicz 2006). The innovative feature of REA is establishing the functional relationship between multiple relevant criteria and the best choice among options through

<sup>11</sup> Alternatively, in extreme cases, an existential threat (see section 6: REA III, for an example) may serve as an exogenously-set agenda, insofar as the group will cease to exist if it does not address the issue. This second sort of exogenous agenda-setting is common to each of the decision-making approaches considered here.

**TABLE 1. Three approaches to epistemic-democratic decision-making**

	Deliberation (DEL)	Independent Guess Aggregation (IGA)	Relevant Expertise Aggregation (REA)
<b>Issue choice</b>	Exogenous or endogenous	Exogenous	Exogenous or endogenous
<b>Options</b>	Exogenous or endogenous	Exogenous	Exogenous or endogenous
<b>Independence</b>	No	Yes	No
<b>Updating</b>	Yes	No	Yes
<b>Choice among options</b>	By reasons offered by deliberators	By individuals assessing issues	By expertise, or reputations & arguments of domain-experts
<b>Decision by</b>	Consensus or vote	Independent votes	Relevance-weighted votes

Notes: Endogenous = issues or options are determined by the decision-making group. Exogenous = issues and options are determined by external agency.

equal relevant-domain-weighted votes based on the reputations and testimony of domain-experts. This article argues that, by shifting the focus from judging complex issues “in the round” to judging experts in circumscribed domains, REA enables a collectivity to make superior common-interest choices, under time-constraint and without elite capture. Table 1 summarizes the relevant features of REA compared to conventional IGA and DEL.

Under the right conditions, a middle-way epistemic approach to democracy can answer the challenges of sustaining transitivity and collective agency, while avoiding elite control.<sup>12</sup> Yet it still faces procedural hurdles: Determining what issues ought to be addressed and when; defining the options among which a choice must be made; choosing well among those options under time constraint. The distinguishing features of REA, which enable it to clear those hurdles, are that (1) issues are parsed into a manageable number of domain-parts; (2) domains of expertise are weighted according to their relevance to the issue; (3) experts in each domain rank options according to the criteria relevant to that domain. Relevant domains may be established by rules or may be determined by a combination of deliberation and voting. In either case, the number of parts into which the issue is parsed is (ideally) an optimum that balances two aspects of transparency: Including more domains allows domains to be defined more narrowly, producing greater clarity about the expertise relevant to each domain. Yet restricting the number of domains clarifies the relative relevance of each domain to the issue being decided.

The discussion that follows the next section considers three versions of REA. In REA I issues, options, and domains are pre-established by institutional rules

and an infallible expert in each domain ranks the options according to the criteria of judgment appropriate to that domain. REA II also assumes pre-established rules, but introduces mass voting by domain, on options, advised by multiple domain-experts, as a solution to the problem of the fallibility of individual experts. REA III assumes that issues, options, and relevant domains are set in a deliberative/voting stage that precedes and is advisory to the final vote. Table 2 sets out the primary features of each version.

### ARISTOTLE *POLITICS* 3.11: THE WISDOM OF THE MANY

In a celebrated passage of the *Politics* (3.11 = 1281a42-b10), recently and skillfully analyzed by James Linley Wilson (2011) as an example of “deliberative integration,” Aristotle claims that, under the right conditions, “the many” judge certain matters better than any excellent individual or small group.<sup>13</sup> This section fills out Aristotle’s bare-bones account of the wisdom of the many in order to show that the preconditions required for Aristotle’s approach to epistemic democracy are not so demanding as to relegate the wisdom of the many to the realm of ideal theory alone. Aristotle’s account of collective judgment suggests how diverse expertise might be aggregated by a group of democratic decision-makers confronted with a variety of possible answers.

The relevant passage is laid out schematically, below, with clarifying notes in brackets and key Greek terms in parentheses. The subdivision of the passage into eight sections is my own and is the basis of subsequent citations of this passage (flagged §):

<sup>12</sup> List 2011 shows that democracy confronts a trilemma in that there is no decision procedure simultaneously satisfying “robustness to pluralism,” “basic majoritarianism,” and “collective rationality.” In REA, the trilemma is avoided by relaxing “robustness to pluralism” by assuming that there is a degree of pre-existing attitude cohesion (per note 3) and that deliberation in the course of the decision process produces further alignment of attitudes (moving towards single-peakedness). REA I and II are subject to elite agenda control, but REA III is not (section 6).

<sup>13</sup> Waldron 1995 is an influential discussion of this passage in terms of knowledge aggregation. See also Newman 1887 III *ad loc.* (with citation of relevant comparanda from Aristotle and other ancient writers); Keyt 1991; Aristotle, Robinson, and Keyt 1995; Ober 1998: 319–26; Kraut 2002: 402–409; Gottlieb 2009: 200–207. Lane n.d. and Cammack 2013 argue that the passage concerns aggregated virtue alone, and has nothing to do with deliberation or diversity; but see discussion that follows, with note 16.

**TABLE 2. Three versions of Relevant Expertise Aggregation**

	REA I. Complete rules infallible experts	REA II. Complete rules mass voting	REA III. Incomplete rules mass voting in stages
<b>Issue choice</b>	Set by rules	Set by rules	Set exogenously, or by deliberation/vote
<b>Options</b>	Set by rules	Set by rules	Set by deliberation/vote
<b>Domains &amp; relevance</b>	Set by rules	Set by rules	Set by deliberation/vote
<b>Experts per domain</b>	One	Multiple	Multiple
<b>Choice among options</b>	By experts, based on individual expertise in a given domain	By citizens, based on reputation of experts, reasons given by experts	By citizens, based on reputation of experts, reasons given by experts
<b>Decision is a function of</b>	Domain-experts' ranking of each option, in their own domains of expertise	Mass votes, aggregated by relevant domains, on options, advised by domain-experts	Mass vote on options, advised by prior votes, by domains on options, of a council advised in turn by domain-experts

1. The many (*hoi polloi*), of whom none is individually an excellent (*spoudaios*) man, nevertheless can, when joined together, be better than those [the excellent few].
2. Not [better] as individuals but all together (*hōs sumphantas*),
3. just as potluck meals (*sumphorēta deipna*) can be better than those provided at one man's expense.<sup>14</sup>
4. For, there being many, each person possesses a constituent part (*morion*) of virtue (*aretē*) and practical wisdom (*phronēsis*),
5. and when they have come together, the multitude (*plēthos*) is like a single person (*hōsper hena anthrōpon*), yet many-footed and many-handed and possessing many sense-capacities (*aisthēseis*),
6. so it [the multitude] is likewise [like a single person with multiple capacities] as regards to its facets of character (*ta ēthē*) and its intellect (*dianoia*).
7. This is why the many (*hoi polloi*) judge better (*kriuousin ameinion*) in regard to musical works and those of the poets,
8. for some [judge] a particular part [of the issue] (*ti morion*), while all of them [together judge] all [of the parts taken as a whole] (*panta de pantes*).

*Politics* 3.1281a42-b10. Trans. C. Lord, adapted.<sup>15</sup>

<sup>14</sup> This passage is reprised in similar language at 3.1286a24–31: “The polis is made up of many persons, just as a feast to which many contribute (*hestiastis sumphorētos*) is finer than a single and simple one, and on this account a mob (*ochlos*) judges many matters better than any single person.”

<sup>15</sup> The passage should be read in the framework established by Aristotle, *Nicomachean Ethics* book 6: a detailed discussion of the relationship among sense capacity, virtue, practical wisdom, character, intellect, and experience – and their bearing on deliberation and decision. Waldron (1995), Kraut (2002: 402–409), and Wilson (2011) emphasize the deliberative character of *Politics* 3.11. Gottlieb (2009: 200–207) argues persuasively that Aristotle is neither being ironic nor presenting someone else's argument. She shows that the optimistic account of democratic decision-making in this and related passages is compatible with the discussion of the unity of the several virtues in *Nicomachean Ethics* and *Eudemian Ethics*, because unlike disunited vices, the virtues (like collective judgments) cohere.

Aristotle's account is highly compressed. If we are to understand how, in the concluding phrase (§8), “some judge a particular part of the issue, while all of them together judge all of the parts taken as a whole” we must do some unpacking, in light of information familiar to Aristotle's original readers (Wilson 2011: 263–67). Aristotle's point (§1) is that under the right conditions, a group of ordinary people judge better (i.e. choose more reality-tracking options with better expected outcomes) than a few excellent persons. The group achieves its correctness of judgment *as a group* (§2). Aristotle offers two homey examples (potluck meal, judging music/poetry) of a collectivity achieving a superior outcome. I assume that Aristotle expected each example to be familiar to his original readers, and that this presumed familiarity accounts for some of the compression of the passage.

The first example (§3) is an analogy: the “potluck meal,” to which prospective diners bring different contributions. The potluck meal is, potentially, an excellent whole. We must presume, based on Aristotle's core assumptions about justice as a joint-and-several common good, that the result of a successful potluck meal is a better experience for each contributor than would be the case if a “simple” meal (3.1286a29–30) were provided at one man's expense. The several contributions are the parts that constitute this potentially excellent whole. As such, in order to achieve the meal's potential, each of the parts must be of the right sort. The potluck, as a whole, will go wrong if the parts, the various contributions, are not at once diverse and good. Yet how will diversity and goodness of contributions be assured? If we assume independence of contribution choice (i.e. no diner knows *ex ante* what another will bring), then each diner may just happen to bring the same thing - if we have six diners, we may end up with six courses of pasta salad. Regardless of the goodness of the pasta salad, this will not be an excellent meal and certainly no better than one provided by an individual. Moreover, potluck dinners are susceptible to free-riding: A free-riding diner might choose strategically to bring something cheap and poor, anticipating that others will

bring better fare. If each diner fears being stuck with a sucker's payoff by free-riders, there will be a race to the bottom and the common repast will be correspondingly poor.

If the meal is to be excellent, as Aristotle specifies it can be, the right conditions – the operating assumptions of the contributors to the dinner – must include some common knowledge and some rules in the form of social norms. First: even assuming that they do not deliberate about specific contributions in advance, the multiple contributors must have good reason to expect particular people to bring a particular sort of food or drink. That is to say, they must share common knowledge of one another so as to be able to predict what each is likely to bring to the table. Next, there must be a norm that ensures that each brings something good to the dinner. These are not excessively demanding conditions. Anecdotal: I have gone on picnics with the same group of friends for many years. We seldom prearrange who was to bring what, but we have a good idea of what sort of thing each is likely to bring. Moreover, there is a norm of contributing good things. Per Aristotle's specification, it is arguably a better experience – gastronomically as well as socially – than a dinner provided at one individual's expense. I assume that this outcome is not uncommon among long-lived associations with shared norms and stable memberships. Aristotle's original readers were certainly familiar with the practices of voluntary associations, which were prevalent in classical Greece (Ismard 2010); some will have had experience with potluck meals; others would know of them through reading.<sup>16</sup>

Aristotle's potluck analogy gets us some way towards understanding what Aristotle was after in the "wisdom of the many" passage. The potluck analogy

<sup>16</sup> Along with the standard Greek lexicon (Liddell, Scott, Jones 1968: s.v. *sumphorētos*: "brought together, "collected") and most other interpreters of the two (*Politics* 3.1281b2–3, 1286a29–30) relevant passages (recently: Wilson 2011: 263–64), I take the meal (*sumphorēton deipnon/sumphorētos hestiasis*) to be a potluck. In the alternative proposed by Cammack 2013 and Lane n.d., Aristotle refers to a meal provided at the *financial expense* of many, through a *public* process, and the superiority of the meal is a feature of the aggregated *virtue* of the financial contributors. This seems unlikely. The rare term *sumphorētos* is unattested in Greek public documents. Pace Cammack 2013 the concept "meal shared by the members of an association, to which several members contribute foodstuffs," was familiar to Aristotle's readers. It comes up in Hesiod, *Works and Days* (722: *daitos ek koinou*), before the monetization of Greek economies made common *financial* contributions feasible. Xenophon (*Constitution of the Lacedaemonians* 5.3) refers to Spartan common meals (*sussitia*) featuring "many additional contributions" (*polla paraloga*) provided by hunting among other sources. Xenophon (*Cyropaedia* 7.1.12) also analogizes a battle to a common meal (*eranos*) to which "we may each contribute many good things for our mutual benefit" (*polla kaqatha allēlois eisenegekhein*). In Aristophanes' *Acharnians* (1085–1142, with scholiast) the protagonist packs a basket of special foods to bring to a dinner (*deipnon*) at the house of a priest. The alternative interpretation leaves unexplained why the inferior, provided-by-one-man meal is described (1286a29–30, see note 14) as *haplē*: "simple as opposed to compound or mixed" (Liddell, Scott, Jones 1968. s.v. *haploos/haplous* IIIa; citing Aristotle *Metaph.* 989b17, *Sens.* 447a18). The centrality for Aristotle of the complex whole (e.g. the family or polis) made up of diverse parts, the priority of the whole to its parts, and the political implications of that hierarchy: *Politics* 1.1253a20, 1260b14–15 with Ober 1998: 295–96.

introduces the issue of parts (contributions) and wholes (the meal). The analogy suggests, moreover, that the optimal number of parts falls within a range: with too few dishes the meal will be excessively simple. Yet at some point it will not be improved, indeed may be made worse, by the addition of further dishes. The analogy also shows why the members of the group must share some relevant forms of knowledge, and why they must share social norms about quality.

Aristotle's second example (§7) concerns judgment of a musical/poetic production: He states as a matter of fact that *hoi polloi* do judge better (than the few) in regard to "musical works and those of the poets." Aristotle may have various musical/poetic productions in mind here. But it seems certain that among the productions Aristotle and his original readers had in mind was the performance of drama, and especially tragedy. Tragic theater was, in Aristotle's view and that of modern scholars, the definitive "musical/poetic" venue in classical Athens, where Aristotle lived for most of his working life (Wilson 2000). It is a safe guess that Aristotle's original readers were reasonably familiar with the rules governing the judgment of dramatic performances.

In classical Athens, prior to a Dionysian festival, three tragic poets (and three comic poets) were chosen by a state official to present works for performance. Each tragic poet presented a group of three plays. After the performances, the three play-groups were judged; on the basis of that judgment the poets were awarded first, second, and third prizes. The judging was by a panel chosen by lottery from among the citizens of Athens. In practice, the mass audience of several thousand spectators, by its response to the performances, gave the judges their cue – as appeals for the audience's good will in Aristophanes' extant comedies clearly demonstrate. It is, in sum, a likely hypothesis that Aristotle had the mass judgment of a theater audience in mind when he stated that *hoi polloi* judge better than any one individual in regard to musical and poetic works.<sup>17</sup>

Aristotle specifies (§4) that each member of the decision-making group possesses a constituent part of virtue and practical wisdom. These parts can be effectively aggregated: Aristotle states (§5–6) that a mass can, under the right conditions, be like a single person – yet unlike a single person it possesses a multitude of sense-capacities, and likewise the facets of its character and its intellect (two components of practical wisdom): are multiplied. Aristotle seems to mean that the group possesses among its membership multiple and diverse conjunctions of sensibility, virtue, and practical wisdom, and that these conjunctions are relevant to collective judgment. Individuals manifesting

<sup>17</sup> The audience's "vote" was in the form of what Schwartzberg (2010) calls acclamation. At the major festivals, the tragic prize was for a set of three tragedies; the comic prize for a single comedy. Athenian audiences as judges of drama: Csapo and Slater 1994; Wallace 1997; Marshall and van Willigenburg 2005. Aristotle (*Rhetoric* 3.2.1403b31–35) also suggests ways the "vote" could go wrong if the many have misplaced priorities.

these multiple conjunctions are, therefore, explicable as parts (§4) that, when properly aggregated (come together), produce a right single-person-like decision. Since the example (§7) is judgment of musical/poetic productions, and since (so I have argued), Aristotle had tragedy in mind, some of the multiple conjunctions may be understood as forms of expertise that bear on the judgment of the multiple parts that make up a good tragedy (§8).

Aristotle's point here seems to be that an individual may indeed have the sensibilities, virtue, and practical wisdom to be a very good at judgment of a given part of tragedy. But he will lack some conjunctions of sensibility, virtue, and practical wisdom – some forms of expertise – relevant to judging the whole. A group with the right sort of diversity will possess all forms of expertise necessary to making a good decision. The group will judge well if it is able to bring the relevant forms of expertise to bear on the constituent parts of the tragedies being judged, while giving each form of expertise the right weight.<sup>18</sup> If the account is to avoid metaphysical mysteriousness, the aggregation process must be accomplished without losing sight of the fact that, while it is in some ways *like* a single person, the group *actually* consists of multiple individuals. The aggregation is explained unmythically if we suppose (as the context of the passage clearly implies) that Aristotle was referring to a decision-making *institution*. If we assume that Aristotle was in fact referring to the judgment of tragedy in §7, we can fill in his account of the “wisdom of the many” by reference to actual institutional rules, domains of expertise, and a hierarchy of relevance. Analyzing how a group of the right sort, acting as a quasi-person through procedural rules, could correctly rank tragedies, puts some flesh on the bones of Aristotle's account of the wisdom of the many.

## REA I: COMPLETE RULES WITH INFALLIBLE EXPERTS

Athenian institutions stipulated the rules for ranking (first, second, third prize) three tragic poets based on the performance of three tragedies by each poet. In the *Poetics* (1450a6–14), Aristotle provides an account of the six parts of tragedy that (for our purposes) can be regarded as additional rules: “Necessarily then every tragedy has six constituent parts (*merē*), and on these its quality depends. These are plot, character (*ēthē*), diction, intellect (*dianoia*), spectacle, and song. . . This list is exhaustive, and practically all the poets employ these elements.” In listing the parts that make up the whole that is a proper tragedy, Aristotle specifies the relevant domains of expertise. The *Poetics* passage recalls the *Politics* passage. Both concern character and intellect as natural causes and co-determinants of the quality of an action.<sup>19</sup> Moreover, both are concerned

with how subsidiary parts (*merē, moria*: terms used interchangeably by Aristotle) constitute a whole. With reference to the potluck analogy, we can think of each of the six parts of tragedy as analogous to dishes that make up a fine meal, although the analogy is inexact in that it is *judgment* of quality, not quality in itself, that is Aristotle's concern in §7 and §8 of the *Politics* passage.

In order for a tragedy group to be judged “best,” each of the six constituent parts must be taken into account and properly weighted for relevance; ignoring or improperly weighting any relevant part will result in a flawed overall judgment and thus in a bad outcome: the prizes will be awarded to the wrong poets. Aristotle specifies that the six parts are ranked in the following order of importance: plot, character, intellect, diction, song, spectacle (*Poetics* 1450a-b). Thus, plot is most relevant to quality and must be most heavily weighted; spectacle is least relevant and is weighted least heavily, with the others in between. In the model that follows (Table 3) the relevance-weighting of the six parts (Pw) is 8, 6, 5, 4, 3, 2; thus the most relevant part (plot = 8) is assumed to be four times as important as the least relevant (spectacle = 2). We do not know how close this is to Aristotle's own weighting, and of course changing the weights produces different outcomes. The following simple (no interaction terms) and stylized model is meant only to show how the tragedy ranking problem is solved, when we assign specific weights to the six parts, and (extrapolating from Aristotle) make some assumptions about rules and experts.

In this stylized epistocratic system, the assumed features of the tragedy choice are as follows: (1) the number of options (three tragedy-groups) and the actual options (T1, T2, T3) are set by rules; (2) the six relevant parts (per Aristotle's *Poetics*) are set by rules; (3) each part is a domain for which there is an infallible expert, who judges correctly by ranking the three options accurately, in terms of the criteria relevant to his domain;<sup>20</sup> (4) weighting of the relevant parts (i.e. Aristotle's hierarchy, now assigned particular weights) is set by rules. Having watched the performances, each expert ranks the options based on his domain-expertise. For example, the Plot expert, impressed by T1's narrative development, ranks T1 highest, yielding an unweighted rank of 3, and a weighted score of 24. After each expert has ranked the options, the aggregate score for each option is tallied. The final ranking (and thus the outcome: distribution of prizes) is determined by the aggregate scores. The procedure ranks the three

(*dianoia*)—for it is these which determine the quality of an action; indeed intellect and character are the natural causes of any action and it is in virtue of these that all men succeed or fail—it follows then that it is the plot which represents the action. By ‘plot’ I mean here the arrangement of the incidents: ‘character’ is that which determines the quality of the agents, and ‘intellect’ appears wherever in the dialogue they put forward an argument or deliver an opinion.”

<sup>20</sup> In a variant epistocratic system, the single infallible expert in each domain is replaced by a classic Condorcet jury of independent and competent (above 0.5 likely to be correct) experts. If their level of competency is high enough, and there are enough votes, the choice of option will approach certainty. This parallels the “distributed premise-based procedure” of List and Pettit 2011, ch. 4.

<sup>18</sup> The passages from Aristotle's *Metaphysics*, *Parts of Animals*, and *Rhetoric*, cited in note 8, are especially relevant in this context.

<sup>19</sup> Cf. the preceding passage (*Poetics* 1449b36–1450a6): “And since tragedy represents action and is acted by living persons, who must of necessity have certain qualities of character (*ēthē*) and intellect

**TABLE 3. Hypothetical Aristotelian ranking of three options**

	REA I							REA II						
	Pw	T1u	T1w	T2u	T2w	T3u	T3w	T1u	T1w	T2u	T2w	T3u	T3w	
<b>Plot</b>	8	3	24	1	8	2	16	425	3400	50	400	25	200	
<b>Character</b>	6	1	6	2	12	3	18	50	300	200	1200	250	1500	
<b>Intellect</b>	5	2	10	3	15	1	5	150	750	300	1500	50	250	
<b>Diction</b>	4	2	8	3	12	1	4	180	720	300	1200	20	80	
<b>Song</b>	3	3	9	1	3	2	6	375	1125	25	75	100	300	
<b>Spectacle</b>	2	1	2	3	6	2	4	10	20	450	900	40	80	
<b>Aggregate</b>		12	<b>59</b>	13	<b>56</b>	11	<b>53</b>	1190	<b>6315</b>	1325	<b>5275</b>	485	<b>2410</b>	

Notes: Options are groups of tragedies (T1, T2, T3). Pw = weighted relevance of a given part (domain of expertise). Pw is multiplied by the expert ranking (REA I: 3 = highest), or mass vote (REA II), to achieve the weighted score. T(n)u = unweighted rank or vote for a given part for each option. T(n)w = weighted score of a given part. Aggregate T(n)w (the sum of weighted scores of all parts) determines the correct (Aristotelian) ranking among options: T1 > T2 > T3.

options transitively, in the correct (Aristotelian) order: T1 (score of 59) is awarded first prize; T2 (56) is second; T3 (53) third.<sup>21</sup>

REA I models the decision-making processes of an individual faced with making choices on an issue that is divisible into domains of expertise. Suppose, for example, that an experienced opera critic must write a review that includes a rating (say, one to four stars) and a ranking (better or worse than other operas this season). Between acts of the performance she seeks the opinion of audience-members expert in the various aspects of the performance she will highlight in her review (singing, staging, acting and so on). Her experience enables her to identify experts and to weight the parts as she decides on rating and ranking. Or suppose that an attending physician must decide among several treatment options for a patient. The physician’s experience with this sort of case leads her to recognize that the case has several distinct aspects, and that each aspect demands a certain expertise. The physician consults medical experts, each of whom makes a recommendation based on his or her specific domain of expertise (e.g. surgery, diet, psychology). Under the right conditions, the physician aggregates appropriately weighted

expert opinions, and thereby decides on a best course of treatment.<sup>22</sup>

Neither the opera critic nor the attending physician is likely to assign numerical values to the expert opinions that contribute to the final decision, but the basic features of REA remain: a complex matter is broken down into parts, known experts judge each part, options are delimited by rules, weighting is by relative relevance among parts. In each case the decision must be timely (the critic has a deadline, the treatment must begin before the patient dies). The opera critic and attending physician examples show how the institutionalized rules of REA I enable several experts to be “like a single (rational and experienced) person” in coming to a decision. It is, however a non-democratic method in that the agenda is not set by the group, ranking in each domain is by a single dictator-like expert, and the experts’ votes are unequal (due to weighting). Moreover, this epistocratic “cloistered expert” approach (Ober 2008: 1–3) is ill-suited to addressing complex situations that lie outside the group’s prior experience.

**REA II: COMPLETE RULES WITH MASS VOTING**

In REA I the provision of experts in multiple domains is essential to achieving the superior outcome, but there is no mass vote. The rules determine the range of options; after the domain-experts have ranked the options, all that is needed is for a competent authority to apply the weighting formula and add up the scores. Yet Aristotle’s “wisdom of the many” passage assumes that it is a multitude, acting like a single person (§5), that judges the whole; the superior judgment on musical and

<sup>21</sup> The approach described here is a Borda count, in that each voter ranks each option. There are other possible systems for employing expertise in relevant domains to judge quality. For example, in an unweighted system, each expert might make a binary choice (0,1), indicating that the tragedy-group did or did not meet some established standard. All tragedy-groups receiving six votes (i.e. meeting the standard in each domain) might, for example, receive a prize. Thus, there could be one, two, or three prizes – or none at all. Alternatively, in a relevance-weighted system each expert might have a veto (he can vote 0, or 1–3). If any expert determines that a tragedy-group fails to meet a given standard in his domain (voting 0), it is excluded from further consideration; unvetoes groups are ranked. Both systems allow each expert to exert considerable power over the outcome, and could result in no prize being offered (each group being vetoed by one or more judges). These (among other) relevance- and expertise-sensitive approaches to judgment aggregation may be appropriate for other decision contexts, but none seems to fit the Aristotelian-Athenian approach to judgment of tragedy so well as the system I have described here. My thanks to an anonymous reader for these important points.

<sup>22</sup> Note that in each case the individual *is* an experienced expert, but *is not* a general expert: i.e. she has enough expertise to determine relevant domains and to judge among experts, but her expertise is insufficient to allow her confidently to judge the issue on her own. This is just the situation I attribute to Aristotle’s wise many, acting as a rational quasi-individual. I owe the opera critic and attending physician examples to discussions with David Large (who reports that he has witnessed opera critics doing just this) and Adrienne Mayor, respectively.

poetic works is made by “the many” (§7) – not simply by a properly diverse body of domain-experts. The judging tragedy case benefits from adding a mass of voters if we relax the expert infallibility assumption. In the real world the information held by an expert is sometimes wrong – data may be noisy, methods imperfect. But even an expert who knows the right answer might not disclose it. A self-interested expert may misrepresent her belief for strategic reasons. Absent the right incentives (section 7, below) strategic behavior could corrupt the process. If one or more of the experts is corrupt in Aristotle’s sense (he values some private benefit above a common interest in right ranking), the best tragedy may not be ranked first. Aristotle was aware of the danger corruption posed to decision-making. He uses the metaphor of a large quantity of water that remains relatively unpolluted by a small admixture of impurity to illustrate why decisions made by a crowd are less subject to corruption-caused error (*Politics* 3.1286a3–35).

One solution to the problem of corruption (Aristotelian in spirit, although not spelled out in the text) is for a mass of citizens to vote on options, by domain, based on the reputations and testimony of multiple experts in each domain.<sup>23</sup> After each domain-expert has explained the reasoning behind his ranking (“some judge a particular part”: §8), each citizen votes for one option in each relevant domain (“all of them together judge all of the parts”: §8), basing his vote on a judgment about the experts’ reputations and arguments. This approach is modeled in Table 3 (REA II), assuming 500 voters. This vote of “all together” (§2) in each domain stands in for judgment of a single infallible domain-expert and so the mass is non-mysteriously acting “like a single person” (§5). Insofar as the mass of voters judges the experts well in each domain, its collective decision is better than that of the excellent individual (§1), because the corrupt expert’s mis-ranking is rejected and so does not corrupt the outcome. The votes on the domains are counted and weighted (based on the rule); the option with the highest total score (in this case T1, score of 6315) wins. Although the domain-votes are weighted, each voter has equal say in the overall outcome because each casts an equal vote in each domain.<sup>24</sup>

<sup>23</sup> Alternatively, per note 20, multiple domain-experts might be constituted as Condorcet juries. This epistocratic approach might solve the corruption problem, but it requires a large number of competent experts in each domain. It does not explain Aristotle’s “wise many”; nor does it answer our primary question of how a real democracy might be epistemic. Condorcet’s original theory was predicated on choosing between only two options; Young 1988, and List and Goodin 2001 offer different ways to extend the jury theorem to cover multiple options. List and Goodin 2001: 287–94, show that the truth-tracking value of aggregation emerges in multi-option choices, even if the marginal mean likelihood of correctness is small, in populations of several hundred voters; when the mean is larger, the effect emerges in populations of about 50. McCannon 2011 offers a theory for optimizing the size of Condorcet juries based on the costs of size, accuracy of decision-makers, and importance of correct judgment; his theory shows that the size of classical Athenian juries (typically 501 for criminal cases) and the Athenian council (of 500 members) was near-optimal.

<sup>24</sup> In columns T1u, T2u, T3u of Table 3: REA II, the unweighted expert ranking of 1–3 is replaced by the number of votes for each

The REA process remains dependent on experts and their testimony. It assumes at least some experts who accurately report the state of the world, as it is relevant to their domain. As in the real-world cases of Condorcet juries with opinion leaders (Ladha 1992) and jurors hearing the same evidence (Dietrich and List 2004), the result is likely to fall short of the near-certainty that is theoretically achieved by a “classic” Condorcet jury, in which independent votes are based directly on a state of the world. The REA process will fail in the absence of non-colluding genuine experts, who value their reputations, and who are competent at explaining the reasoning behind their rankings to non-experts. It also requires that the mass be able to judge experts well.

Aristotle has specified that each of the ordinary individuals constituting the crowd (§1) possesses only a “part” (*morion*) of virtue and practical wisdom (§4). The group’s capacity to judge well – i.e. to act as a qualified (if not infallible) quasi-person (§5) – depends on its *collective* possession of an adequate level of virtue (at a minimum: non-corruption) and practical wisdom (capacity to judge reputations and arguments). In the discussion that follows the “wisdom of the many” passage, Aristotle emphasizes that the decision-making group must be of the right sort if it is to make superior judgments (*Politics* 3.1281b15–20, 1286a36–38). I take it that this means that the group is collectively sensible to the loci of relevant kinds of expertise, and it pays proper attention to the reputations and testimony of those who are especially adept in each domain. Being of the right sort also means being collectively attentive to the common interest and being marginally competent at judging individual experts – which is different, and (*ex hypothesi*) less cognitively demanding, than competence in judging the substance of an issue as a complex whole. Some voters may be corrupt or incompetent at judging experts, but the mass is assumed to be large enough to dilute their influence; it is not systematically corrupted nor dominated by incompetents. If we assume average individual competence in the judgment of experts to be over 0.5, on a scale of 0–1 (see Table 4) the Condorcet jury effect will push in the direction of a correct choice. The single-person-like collectivity has, on this reconstruction, sufficient virtue and adequate practical wisdom (conjoined character and intellect: §6) to judge the reputations and reasoning of domain-experts, and thus to choose the best option.

Like Condorcet, Aristotle assumes a group of preference-sharing decision-makers, each of whom believes that there is a best choice and seeks that best choice. Like Condorcet, the choices of marginally competent voters are aggregated at scale. Aristotle did not do Condorcet’s math, but his intuitions seem to point to

option. Alternatively, and more closely following the model of REA I, a Borda count might be employed, such that each voter rank orders each option, rather than simply voting for his top choice. In either case, the mass of voters, as a collective, does just what the opera critic or attending physician does: makes a judgment in each relevant domain, based on input from experts, and decides on an option according to the weighted aggregate.

something like a jury theorem. Yet unlike Condorcet, in Aristotle's approach (as reconstructed here) a central role is played by reason-giving and intra-group epistemic diversity. Diversity in relevant domains of expertise (Page 2007), along with the aggregation of marginally competent choices, is what grants a REA group its potential to choose well. Aristotle can assume that, were they to decide independently on the substance of the issue (as Condorcet voters unguided by domain-experts), most members of the decision-making group would be likely to choose wrongly, and so the aggregate decision would tend to be wrong. If all goes well, the collectivity comes to the right answer on an issue with several parts, even though most voters are unable to make individually correct judgments on the complex whole. REA II replaces Condorcet's assumption of individual marginal likelihood of correctness on the matter being decided with an assumption that some people are expert in any given domain and that a sizable majority of voters will be reasonably good at judging experts. The assumption of "marginal likelihood of correctness" remains essential to the process, but it is deferred: away from the substance of the matter at issue and towards competence in judgment of experts.

Since REA II depends on the capacity of ordinary individuals to assess reputations and arguments made by experts, we must ask whether it is plausible to assume that, even under the best conditions, a large, modern group of ordinary persons could be adequately competent in judging experts. Although small ancient communities enjoy advantages in terms of shared values and social knowledge, a contemporary REA II process could avail itself of statistical instruments for ranking the reputations of experts, based (for example) on standard methods for assessing the impact of academic scholarship, or on now-familiar peer-based systems for rating and ranking products and services. For some voters, reputation (the high rating of an individual expert or convergence of opinion among highly-rated experts) might be dispositive. Yet reason-giving by experts remains important, both as an alternative to numerical ranking and because citizens' dignity demands that they be treated as adults with the opportunity to act on the basis of reasons offered by others. The imperative for reason-giving by experts is a constraint on the selection of domains, in that both premises and conclusions of arguments in highly specialized subfields will remain opaque to non-specialists. Each domain on which citizens are to vote must be capable of fielding genuine experts ready and able to make arguments that can be taken up by ordinary citizens. This is demanding – but not excessively so, in light of contemporary experience with expert elicitation (Renooij 2001) and expert testimony in "civic science" (Rhoads et al. 1999; Bäckstrand 2003), which suggests that citizens need not *become* experts to competently assess arguments made by experts.

Informal examples of REA II are readily available in the contemporary world. To take a familiar example, suppose that the faculty of a large and well functioning (thus best-choice seeking) academic department must decide among three candidates for a faculty appoint-

ment. The various domains relevant to the excellence of candidates (say: research, teaching, service), and the relative importance of each domain to the issue of candidate choice, are adequately specified by rules, formal and informal. There are certain individuals recognized as especially knowledgeable who will be consulted on each domain (e.g. specialists in the field of research; students with knowledge of a candidate's teaching). There may be doubt about the quality or impartiality of some of those consulted. Reputations, level of consistency among experts, and the quality of arguments will influence the decisions of the voters. In the end, the members of the department vote, and (if the process has worked as it ought), the vote chooses the best candidate based on the relevant criteria. The collective memory of the department records each step of the process and the relationship of process to outcome (Did the chosen candidate turn out to be as excellent as claimed by experts in the relevant domain?). Reputations are updated accordingly.

REA II respects democratic values: It employs equal votes of free citizens, acting as dignified adults in making judgments on significant matters of public concern. It allows for timely decisions. Yet insofar as the rules governing options and relevant domains are set by an external authority (e.g. an academic Dean), it remains subject to external agenda control.

### REA III: INCOMPLETE RULES, MULTIPLE STAGES

REA III is a modified REA II process, in which the rules for determining domains and options remain unspecified, and to which a mass vote directly on options (not by domains) is appended. Upon completion of an REA II process by a citizen council, the issue is referred to a larger citizen assembly with final decision authority. The council's ranked options are the starting point for deliberations and voting in the assembly. Compared to REA I and II, REA III may not increase the accuracy of option choice, but, by allowing relevant domains and options to be determined by decision-makers rather than rules, it escapes the shadow of external agenda control. Moreover, the plenitude of issues and domains that might be considered leaves open the possibility that any citizen could, at some point, be regarded as an expert whose special knowledge (like that of students in the appointment case) might contribute to making important public choices. Finally, because REA III incorporates a final, decisive popular vote on the issue, it is attentive, in ways that REA I and II are not, to the practical impossibility of capturing all nuances of a complex issue through subdivision into several discrete domains of expertise. REA III allows greater scope for the practical wisdom and experience of ordinary citizens to be brought to bear on salient matters (cf. Wilson 2011: 265–66 on the "judgment of journeymen").

As a result of these features, REA III more fully expresses the core democratic values of liberty as free speech and assembly, political equality as equal

influence through voting, and dignity as being treated as an adult. Yet rules for establishing relevant domains and options need not *remain* unspecified. Rule-bounded REA decisions are democratic if the rules specifying relevant domains and options were democratically established and so long as they remain subject to democratic amendment. Less-stylized versions of REA I and II could be incorporated into a democratic constitutional order, if an incomplete-rule procedure is employed in constitution-making and amendment. I argue in the final section (7) that a democratic and epistemic regime can, over time, develop rules specifying relevant domains for some categories of decision.

In the case discussed below, a democratically appointed council prepares an agenda for a larger assembly empowered to make binding decisions on matters of common interest. Although pre-established rules govern some aspects of deliberation and voting, relevant domains and options are freely chosen in early stages of the decision process. The background REA conditions are presumed to hold: the decision-making group seeks the best option in addressing a matter of common interest; issues are divisible into parts, each with a specifiable relevance and explicable as a domain of expertise. Additionally, REA III assumes that these background conditions are common knowledge, that the group exists over time, and that group-members update their judgments based on new information.

The historical case considered here – the Athenian response to the threat of Persian invasion in 481 BCE, as described by the historian Herodotus (*Histories* 7.140–44) and recorded in the “Themistocles Decree” – was well known to Aristotle.<sup>25</sup> As with Aristotle on the wisdom of the crowd, the compressed accounts of Herodotus and the Decree seem to describe a version of REA. Some aspects of the following narrative, meant to illustrate how a democratic decision-making process may be parsed into discrete REA stages, are hypothetical. The actual process employed in 481 BCE was certainly messier, but the process described here is intuitive and it accords with the known facts about decision-making procedures in the Athenian council and assembly (Rhodes 1985; Hansen 1987; Missiou 2011).

In 481 BCE, as a massive Persian force prepared to advance west into Europe, the Athenian state was confronted by a clear and present danger. The issue of how to respond to the invasion would ultimately be decided by a vote in a citizen assembly attended by several thousand (adult male) citizens. The agenda for the assembly meeting was set by a council of 500 citizens, chosen by lot. The council’s role was to define policy options. The Greek term for the council (*boulē*) refers directly to its deliberative function

<sup>25</sup> Here I follow the chronology of Hammond 1982, who seeks to reconcile apparent contradictions between Herodotus’ narrative and the inscribed Decree by situating the key decision in September 481, rather than June 480 BCE. For our present purposes the two sources are complementary; on the relevant matters (notably in the relationship of council to assembly), both Herodotus’ *Histories* and the Decree describe (albeit at some remove) the process of making a vitally important decision, and its result.

**Table 4. Hypothetical distribution of competence among 25 voters**

	Identify relevant domains	Judge domain experts	Calculate aggregate scores	Voter's average competence
A	0.85	0.3	0.6	0.58
B	0.8	0.4	0.65	0.62
C	0.75	0.85	0.45	0.68
D	0.7	0.35	0.4	0.48
E	0.45	0.75	0.85	0.68
F	0.6	0.7	0.8	0.7
G	0.55	0.65	0.75	0.65
H	0.5	0.6	0.45	0.52
I	0.45	0.55	0.65	0.55
J	0.4	0.5	0.6	0.5
K	0.35	0.45	0.55	0.45
L	0.3	0.4	0.5	0.4
M	0.25	0.35	0.45	0.35
N	0.3	0.5	0.4	0.4
O	0.35	0.25	0.5	0.37
P	0.4	0.3	0.45	0.38
Q	0.65	0.75	0.25	0.55
R	0.5	0.4	0.3	0.4
S	0.55	0.45	0.35	0.45
T	0.6	0.5	0.4	0.5
U	0.65	0.55	0.45	0.55
V	0.45	0.6	0.5	0.52
W	0.45	0.65	0.55	0.55
X	0.45	0.3	0.6	0.45
Y	0.85	0.75	0.45	0.68
<b>Average</b>	0.53	0.51	0.52	0.52

Notes: Competence is ranked on 0–1 scale of competence (likeliness to choose correctly) in each task-category.

(*bouleuein* = “to deliberate”), and it is quite certain that votes were also taken. We have no record of the council’s proceedings, but by the time the assembly met, three primary options – flee, fight on land, fight at sea – had emerged. Because the agenda for the assembly was announced in advance, ordinary citizens had the opportunity to deliberate among themselves before the decisive meeting, at which a vote of the citizenry would decide how the state would respond to an existential threat.

Although Athens was used to fighting its Greek neighbors, invasion by the Persian empire was an exceptional circumstance. Because decision rules cannot specify relevant domains for exceptional circumstances, and because the decisive assembly vote would be directly on the options (rather than by domains), citizens shared responsibility not only for judging experts, but also for establishing relevant domains and for aggregating domain-specific expertise into an option choice. The procedural task of identifying relevant domains and experts is, in REA III, accomplished in the first instance through deliberations and voting in the council, but all citizens must judge experts and calculate aggregates of domain-specific expertise. There is surely substantial variance among citizens in respect to capability in performing these tasks. Table 4 suggests a

hypothetical distribution of capabilities among a sample population of 25 citizens. A minority of the citizens in this hypothetical sample falls below the presumed point (0.5 on a scale of 0–1) at which his vote will make a positive contribution in each task. Yet, because the mean competence level in each column is above 0.5, we can appeal to a variant of the Condorcet jury theorem (Gronfman, Owen, and Feld 1983; List and Goodin 2001) to suggest that the collectivity will do adequately well in each task. As the number of voters increases (from 500 councilors to thousands of assemblymen), the likelihood of a spread among vote counts adequate to yield a best choice among options likewise increases.

The council takes up the issue of the Persian invasion in meetings that are less time-constrained than the subsequent decisive meeting of the assembly. The deliberation begins by determining the relevant domains. Based on their previous experience in deliberating on other issues, the councilors have a good sense of the distribution of capabilities among their membership – that is, they have got something like Table 4 in their heads.<sup>26</sup> Because they seek the best choice and the stakes are high, the councilmen allow Councilors A, B, C, D, and Y, who are rightly (Table 4 column 1) thought most capable at setting relevant domains, to take the lead in these deliberations. Councilman A gains majority support for the importance of the attitude of the gods and thus the morale of the populace.<sup>27</sup> This therefore becomes one of the domains in which expert advice will be sought. Councilman B, C, D, and Y make cogent and successful arguments on behalf of other domains: Persia's strategic goals, Athenian mobilization capacity, attitudes and capacities of Athens' allies, and potential threats to Athenian unity. The selection of relevant domains ends when no majority favors adding another domain.<sup>28</sup>

The council's deliberations and votes establish the relative importance of the domains and determine the domain-experts who will offer testimony. As the ex-

perts' recommendations are discussed, the views of C, E, F, Q, and Y – who are known to be especially astute judges of experts (Table 4 column 2), are especially influential. In the course of iterated deliberation and voting, the three primary options (flee, fight on land, fight at sea) emerge and are tested against the views of domain-experts. The process, which was, other than in domain- and option-setting, functionally similar to REA II, led the council to rank the “fight at sea” option first.<sup>29</sup>

With the options identified and ranked, the assembly is called and the results of the council's deliberative/voting process are reported. The assembly then carried out its own deliberations, thus potentially allowing domains of expertise ignored by the council to be considered. Herodotus reports (7.142) that “many opinions” were offered, with prominent citizens supporting different options. Expert testimony was offered for and against each option – Herodotus reports that the *chrēsmologoi* (oracle interpreters) argued that the gods disfavored the option of fighting at sea. Although the Athenians were strongly committed to the value of free speech, if we are to judge by later (fourth-century BCE) practice, those regarded as non-expert in the relevant domain under discussion were not given a full hearing; the time constraints did not allow the luxury of attending to uninformed opinion.<sup>30</sup>

The winning option in the final stage of a successful REA III process is the one that best takes into account the most relevant domains and the most credible experts. Because the final vote is directly on the options, rather than (as in REA II) on options by domains, each individual citizen is ultimately responsible for calculating for himself the relative importance of the several domains (Table 4 column 3), as well as judging the experts in each domain (column 2). Some citizens will undoubtedly over-weight a relatively trivial domain. Yet the assumption that there is an adequate aggregate competence in the procedural task of calculation does not place an impossible cognitive burden upon the citizens. Their burden is, in, any event, lighter than that taken on by voters in non-REA democracies, for whom domain-relevance and domain-experts are not specified in advance by an experienced deliberative body.

In 481 BCE, the fight-at-sea option, put into the form of a proposal by Themistocles (recorded in the inscribed Decree), eventually carried the day. Themistocles' own reputation as a trustworthy leader and as an expert in naval affairs certainly played a role in the choice. Yet Herodotus and the Decree suggest that those favoring the fight-at-sea option took up several domains of expertise that we may guess were

<sup>26</sup> It may seem unrealistic to expect each councilor to have an adequate sense of the capabilities of 499 fellow councilors. But much of the actual deliberative work of the council was carried out by ten representative teams of 50 men (Ober 2008: 142–55). It seems quite plausible that each councilor had in his head a more or less accurate “REA capability table” of his 49 team-mates.

<sup>27</sup> The gods' will was revealed, cryptically, in responses to Athenian queries to Apollo's oracle at Delphi regarding policy options. Gods, and the value of oracles, were taken by most Greeks to be facts about the world. These were not (we would say) brute facts about nature, but they were salient social facts (Searle 1995) that would have considerable bearing on behavior.

<sup>28</sup> The sequence of deliberation and voting are hypothetical, and the domains are inferred from the wording of the Decree, but the Athenian Council did regularly hear expert testimony (e.g. from generals) on various aspects of major issues: Rhodes 1985: 42–46. Although we lack evidence for formal votes to establish relevant domains, voting by domains was certainly known in Athens, notably when the assembly annually voted to re-authorization or revise each part of the law code: MacDowell 1975: 66–69. Aristotle, *Rhetoric* 1.1359b34–1360a12 divides the general legislative domain of “war and peace” (see note 8) into four specific domains, on which military experts would be expected to speak: (1) national military capacity, current and potential; (2) past relations with and military developments in rival states; (3) relative strength of rival states; (4) outcomes of previous conflicts.

<sup>29</sup> That the council's recommendation was adopted in the final vote is suggested by the formula of enactment employed in the Decree: “resolved by the council and the demos.” Decrees passed without a recommendation from the council typically used the formula “resolved by the demos”: Hansen 1999: 139–40.

<sup>30</sup> Non-experts in relevant domains shouted down: Plato, *Protagoras* 319b-c. For discussions of the role of experts in legislation, and the response by democratic audiences to experts in later fifth- and fourth-century Athens, see Ober 1989: 314–27; Kallet-Marx 1994.

heavily weighted: The attitude of the gods was, according to Herodotus (7.143), addressed by Themistocles' convincing reinterpretation of the key oracle. Persian strategic goals, plans for Athenian naval mobilization, the attitudes and capacities of Greek allies, and provisions for securing unity by recalling exiled citizens were addressed in detail in the Decree. Because the final vote was conducted by estimating the number of raised hands, rather than by counting ballots, the vote was observed by the assembly as a "unified whole" (Schwartzberg 2010). Herodotus and the Decree describe the decision as that of the people of Athens, not of a majority faction. The assembly's vote in favor of fighting at sea was understood as a direct expression of the demos' collective will about a matter of common interest. The Decree was implemented on the following day, as generals began allotting commanders, marines, and rowers to Athenian warships.

Given the impossibility of specifying counterfactuals, we cannot know whether the assembly chose the best option, but fighting at sea certainly appears, *ex post*, better than the other options. The decision, as Herodotus emphasizes, changed the course of Greek history in ways that were overall positive for the Athenians. Herodotus states (7.139) that the Athenian decision to fight at sea determined the outcome of the war and that after winning the Battle of Salamis, democratic Athens went on to become the preeminent state of the Greek world. Herodotus elsewhere pointed out (5.97.2–3) that decisions of the Athenian assembly sometimes led to bad outcomes. Yet, over time, the Athenians' capacity to organize useful knowledge through democratic processes, and thereby to make relatively good policy choices, helped to make Athens an exceptionally influential, secure, and prosperous city-state (Ober 2008).

Ancient Athens, with a total population of perhaps a quarter-million, was tiny compared to most modern states. REA III might, however, be adapted to contemporary purposes, for example in a public referendum. After the ballot measure has been certified, a large (say 500 member), representative citizen council is selected by democratic process (say sortition). Through the process of deliberation and voting described above, the council establishes the relevant domains, hears expert testimony in each domain, and rank-orders options. The results of the council's work are published in advance of the popular vote on the issue. The published results provide voters with valuable information about the judgments of a cross-section of their fellow citizens (Hawthorne und.: 40–53). Some voters might review the council's narrative of its hearings, votes, and deliberations. Yet simply by checking the relevance-weighted domains by which the council voted, a voter can decide how well the council's choice and ranking of domains tracks her own sense of these matters. The vote in each domain (see Table 3: REA II) tells her how the various options fared domain-by-domain, based on the councilors' judgment of experts. She knows which option would be chosen, and what the final scores for each option would be, if the decision were made on the basis of the aggregated domain-votes of the councilors.

And she can take all of this into consideration in her own option choice, in light of her views on the competence of the councilors and any other information to which she cares to attend. This variant of REA III resembles experiments incorporating deliberation into real-world democratic decision-making (Warren and Pearse 2008), but it arguably provides more information directly useful to voters at a lower information-procurement cost to each voter.<sup>31</sup>

## CONCLUSIONS: REA OVER TIME

Although the Persian invasion of 481 BCE defines a limit-case, in that the issue was one that no Athenian decision-maker had faced before, the Athenians did not take the exceptional circumstance as a reason to suspend democratic process.<sup>32</sup> Due to the exceptional circumstances the relevant domains and options had to be determined *ab initio* by the council, through the deliberative/voting process. By contrast, many decisions made by long-lived organizations address recurring issues (in Athens: festivals, taxes, public buildings etc.). Each recurrence presents contextual specifics that must be taken into account. Yet collective experience, framed over time by institutional rules, provides guidance on relevant domains and plausible options. To be effective over time, an epistemic approach to democracy must find an appropriate balance between deciding on the basis of rules and experience, or alternatively on the basis of domains and options that arise afresh from the deliberative/voting process. This may be understood as variant of a challenge faced by all complex, long-lived organizations: how to balance the value of routinized learning against the value of experimental innovation (Levitt and March 1988).

An REA group (like any Condorcet jury) becomes more efficient (more likely to choose correctly at smaller size) as the competence of voters increases. If we take judgment of experts to be a sort of expertise, we may assume that learning, in the form of experience and deliberate practice, will (all other things being equal) improve individual competence (Ericsson 2006). Participants will be more likely to assume the costs of learning if they are offered good reasons. Those reasons might be in the form of material incentives and sanctions (rewards or punishments), or persuasive cultural narratives about "why, around here, we do things that way (seek to improve by learning)." Learning by

<sup>31</sup> Alternatively, the council's job could be limited to setting relevant domains and options, and independent citizen panels could be appointed to hear expert testimony and vote on options in each domain. This would limit opportunities for strategic behavior by the councilors, but would also limit the voters' experience of one another, and thus their knowledge of each other's capabilities.

<sup>32</sup> The Athenian citizenry had decided to fight the Persians at Marathon ten years before, but the situation was quite different: the response was to a much smaller sea-borne attack, and so the familiar option of sending out the infantry in full force to repel invaders was a reasonable (and, as it turned out, successful) response. The Athenians emphatically did not agree with Schmitt (2004 [1932]) that exceptional circumstances, in which the state itself is at risk, demand the suspension of democratic deliberation and voting in favor of a dictator.

individuals may be in part formalized (training, mentoring), and may be tested by the sort of *ex post* performance assessments common among contemporary “learning organizations” (Davenport and Prusak 1998; Dixon 2000; Garvin 2000). To the extent that the several tasks of REA can be improved through learning, we would therefore expect organizations offering the right incentives (in the context of the right culture, in terms of shared knowledge and shared values) to achieve better performance over time.<sup>33</sup>

Performance-enhancing learning may also be in the form of self-knowledge and tacit social knowledge. Let us assume, for the moment, that citizens have been given the right reasons to invest in learning relevant to REA tasks. As experience in deliberation and voting grows, individuals may come to recognize their own strengths and limits (i.e. their “type” in respect to where they stand in the distribution modeled in Table 4), and the strengths and limitations of their fellow-citizens. As a result of that recognition, habits of self-assertion and attention to others are formed and reputations for competence in procedure or judgment are established. To the extent that citizens choose to assert themselves on matters in which they are more competent than the mean, and to attend to more-capable others in matters on which they themselves fall below the mean (voting accordingly, or virtuously abstaining from voting; Feddersen and Pesendorfer 1996), we would once again expect the process to become more efficient over time. Alternatively, of course, given perverse incentives, the process might become worse over time – as Plato and other critics of democracy confidently predicted. There is, however, no reason to believe that degeneration is inevitable; given the right incentives, a virtuous cycle of learning and improvement could be self-enforcing.

A democratic organization may become collectively wiser (or, alternatively, less wise) over time by instituting rules that codify option-choice and weighting and thereby make better (or worse) use of expertise. Excessive codification risks ossification and/or elite control. But democratic constitution-making may, in principle, find a ground in which the rules are well enough specified to capture most relevant expertise, while remaining sufficiently porous to allow for innovation through the iterated process of deliberation and voting. This happy state of affairs may not be common, but examples are available in the history of states and other purposeful organizations (Manville and Ober 2003; Ober 2008). If the potential for epistemic learning is realized, it may produce a “democratic advantage” (Schultz and Weingast 2003), yet that advantage arises (if it does) for reasons somewhat different from the bargaining and mobilization factors on which much of the “democracy and state performance” literature has focused.<sup>34</sup>

<sup>33</sup> Lupia 2004 conjoins empirical work in psychology, social behavior, and mechanism design to offer a sober, but not unduly pessimistic, assessment of the necessary conditions for increasing civic competence.

<sup>34</sup> Democracy and economic performance: above, note 2. Performance in the inter-state arena: Reiter and Stamm 2002; Schultz and Weingast 2003.

An optimistic REA-as-civic-education story remains only one possibility. Even with the most optimistic assumptions, consistent improvement, without setbacks, is unlikely to be realized over the entire history of any long-lived organization. An organization practicing REA is not proof against contingency, nor to being misled by experts with good reputations who (by mistake or strategic calculation) propose attractive but unsound arguments in support of inferior options. Nor is it immune to deliberative pathologies (Sunstein 2000, 2002). Worse decisions will be made if the mass of voters proves, in the aggregate, marginally incompetent at procedural tasks or judgment of experts (below 0.5 on the 0–1 scale). The same Athenian democratic process that chose what seems (*ex post*) the best available option when faced with Persian invasion in 481 BCE, seems to have chosen badly in deciding to launch a massive invasion of Sicily in 415 BCE, in the midst of the Peloponnesian War. As in 481, the final decision followed deliberations and a series of votes; multiple options were proposed, and experts with well-established reputations offered arguments. Yet in 415 the assembly chose an invasion plan predicated on misinformation, and a cascade of enthusiasm precluded full consideration of other options. The outcome was a reversal of Athenian fortunes, leading to Athens’ temporary eclipse as a major Hellenic power (Thucydides books 6 and 7). Thucydides’ implicit demand that democrats explain how pathologies leading to wrong choices could be prevented within democratic processes will need to be more fully addressed in future work on epistemic democracy.

For our present purposes it is worth noting that that bad decision-making, arising from what he saw as a flawed democratic process, was Thucydides’ explanation for Athens’ failure in the Peloponnesian War (Ober 1998, ch. 2). His argument was thus predicated on assessing democracy as an epistemic system, aimed at making good choices. Thucydides, in common with other ancient and modern critics, was skeptical of democracy’s capacity to use knowledge in decision-making. Yet (as his praise of Pericles makes clear: 2.65), Thucydides, in common with Plato, Aristotle, and other ancient political theorists, clearly thought that making good decisions on the basis of relevant expertise was a primary aim of politics.

The hope offered to epistemic democracy by REA is not that all mistakes will be avoided. It is rather that fewer mistakes will be made, and when mistakes are made, they may be part of a learning/updating process. In Athens, for example, decision-making procedures were revised at the end of the fifth century BCE in ways that enabled Athens to avoid the cascades that led to the bad choice in 415 (Ober 2008: 64–69). If the right lessons are learned from both successes and failures, and if these lessons are captured by experience and rules, then, over time, generally better options will be chosen, resulting in generally more satisfactory outcomes. Yet this sort of progressive learning faces serious hurdles; Steven Callander (2011) develops a formal model showing how and why the hope of making better policy based on experience can fail in a democracy.

Deciding when hopes of progress are justified will require testing theories of learning in policy-making empirically, both on relevant aspects of political psychology and behavior, and on the performance of particular institutions in specific contexts.

Future empirical studies, experimental as well as historical, might establish the conditions under which the kinds of positive learning discussed earlier in this section are (and are not) feasible, under which experts will (or will not) strategically withhold information, and under which an adequate agreement on domains and relevance can (or cannot) be achieved in the face of enduring conflicts arising from diversity of beliefs and social values.<sup>35</sup> If salient features of REA are in fact prevalent in purposeful organizations, as posited here, then there is reason to think that future empirical work could determine whether and how REA contributes to (or detracts from) democratic performance. Observations and experiments might determine whether REA I explains successful (or failed) decision-making by committees, boards, political parties, and scholarly and creative collaborations. The effects on performance of REA II might be tested by the results of scientifically conducted deliberative polls (Fishkin 2009). REA III could be evaluated by comparing procedures and outcomes of constitutional assemblies whose recommendations must be ratified (and perhaps amended) by a popular vote (Amar 2005).

Finally, we may ask what, if anything, is characteristically democratic about Relevant Expertise Aggregation? Following Aristotle's lead, I have been concerned to demonstrate how a democracy might employ expertise to choose well among available options. But what would prevent REA from being used by a faction to choose the option that best satisfies its own interests? Or by an autocrat seeking to promote the interests of his clients? Might a computerized "expert system" (Buchanan, Davis, and Feigenbaum 2006) aggregate relevant expertise better than human collectivities? This article has argued that REA is well suited to the purposes of democratic organizations seeking to advance collective interests while sustaining the values of liberty, political equality, and dignity. I have not shown that REA is ill suited to advancing factional interests, or to the purposes of non-democratic organizations with different values.

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