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Pyramidal Democracy

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Abstract

I propose a decentralized, multilayered representative democracy, where citizens participate in deliberative policy formation after self-organizing into a pyramidal hierarchy of small groups. Each group elects a delegate, who expresses the deliberative consensus of that group at the next tier of the pyramid. The pyramid thus acts as a communications network which efficiently aggregates useful information and policy ideas. It is also a powerful meritocratic device, which channels legislative responsibility towards the most committed and competent citizens. This yields a practical implementation of deliberative democracy in a large polity.

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'Deliberative democracy' emphasizes the importance of widespread dialogue and deliberation amongst the citizenry as an essential part of the democratic process.[1] Such deliberation should have many positive effects. It would yield superior legislation by eliciting and efficiently aggregating the knowledge, creativity, and analytical skills of the entire electorate. It would also encourage compromise and consensus-formation, yielding legislation with broader public support and greater legitimacy. However, there are several practical difficulties in implementing the deliberative ideal:

1. *Scale:* In a polity with tens of millions of citizens, how can we give each citizen an opportunity to meaningfully participate in deliberative policy formation, while still creating a relatively efficient and effective legislative process?

2. *Competency:* Citizens differ hugely in their legislative competency, due to widely varying levels of education (both formal and informal)[2], intelligence, engagement in the current political discourse, and overall interest in public policy. Unstructured deliberation in random or self-assembled groups generally gives disproportionate influence to the most vociferous, confident, and charismatic speakers, who are not necessarily the best qualified to formulate public policy. If deliberation is to enhance the quality of legislation, then there must be meritocratic mechanisms which promote the most competent (i.e. intelligent, educated, informed, engaged, ethical, objective, pragmatic, and open-minded) participants, instead of favoring ideologues, extremists, and demagogues.

3. *Time Commitment:* To participate seriously in deliberation, a citizen must acquire and maintain the relevant background knowledge, and then evaluate, critique, and perhaps author policy proposals, while discussing them with fellow citizens. This is a full-time job (at least), and most citizens are too busy with their ordinary lives to participate conscientiously. As a result, they will either participate in a superficial (perhaps counterproductive) manner, or altogether opt out of deliberation.[3]

Some deliberative proposals[4] address these problems by relegating deliberation to a purely 'educational' or 'advisory' role, adjunct to existing electoral institutions. In these models, deliberation is intended to produce more informed, open-minded,

[1] See e.g. Barber (1984), Fishkin (1991, 1997), Gutmann and Thompson (1996, 2004), Bohman and Rehg (1997), Elster (1998b), Dryzek (2002), Fishkin and Laslett (2003), Amsler (2004), Leib (2004), or Bächtiger and Steiner (2005a,b).

[2] See Kuklinski et al. (2000) or Delli-Carpini and Keeter (1996) for studies of voter ignorance or misinformation. See Somin (1998, 2004) or Weinshall (2003) for the 'public ignorance' criticism of deliberative democracy.

[3] See Warren (1996) for another discussion of Problems #2 and #3.

[4] See Ryfe (2002) for a survey of contemporary deliberative organizations.

cosmopolitan, rational, and critical citizens, who vote more intelligently in conventional elections or referenda. However, the ballots of these elections and referenda are still determined by conventional political parties or legislatures, so this is still a 'top-down' legislative system. Ultimately, citizens affect legislation only by voting, influencing other citizens' votes, and perhaps sending non-binding policy advice to legislators.

Some proposals [e.g. deliberative polls (Fishkin, 1991, 1997), minipopuli (Dahl, 1989, p.340) or citizen's juries (Coote and Lenaghan 1997, Jefferson Center 1999, Leib 2004)] also address Problem #1 by restricting formal deliberation to relatively small, random samples of citizens, which are intended to be 'statistically representative' of the general population (Goodin (2003) calls this 'ersatz deliberation'). Also, some proposals address Problem #3 by limiting formal deliberation to brief, infrequent, concentrated sessions. For example, Fishkin's deliberative polls occur over a single weekend, and the aforementioned 'random sampling' methodology presumably means that most citizens would only participate in one every few years. Leib (2004) proposes that a small, stratified random sample of citizens be called to serve on a 'deliberative jury'; jury duty would be compulsory but infrequent, and jurors would be compensated, just as in conventional trial juries. Fishkin and Ackerman (2005) suggest limiting formal deliberation to a single national holiday, one week before major elections (although this 'Deliberation Day' is also intended to elicit informal deliberation amongst the electorate both before and afterwards).

However, to fully realize the potential of deliberative democracy, we need a deliberative institution which allows the *entire* electorate to *continually* and *substantively* participate in the legislative process, while resolving Problems #1-#3. Pyramidal democracy (PD) is a decentralized, multilayered form of representative democracy which achieves this goal by arranging the electorate in a hierarchical network of small, self-organized, deliberative groups. This allows each citizen to meaningfully participate in deliberation and policy formation, but also allows her to voluntarily limit her time commitment by delegating some (or most) of her deliberative responsibilities to an elected representative. The resulting 'pyramid' of delegation is a powerful meritocratic mechanism which channels legislative responsibility towards the most committed and competent citizens. The pyramid also acts as a communications network which efficiently aggregates information and policy ideas from all citizens, while naturally filtering out fallacy, misinformation and extremism. Formally, PD works as follows:

1. Citizens self-organize into groups (called *nodes*), each with a minimum number B of members (I suggest $B = 7$, but most nodes will be slightly larger, for stability; see §2.2). I assume people will form nodes based upon similarity of political views and values. The totality of all such nodes is called *Tier 1* of the pyramid.

2. The members of each node meet regularly to deliberate. Each node selects

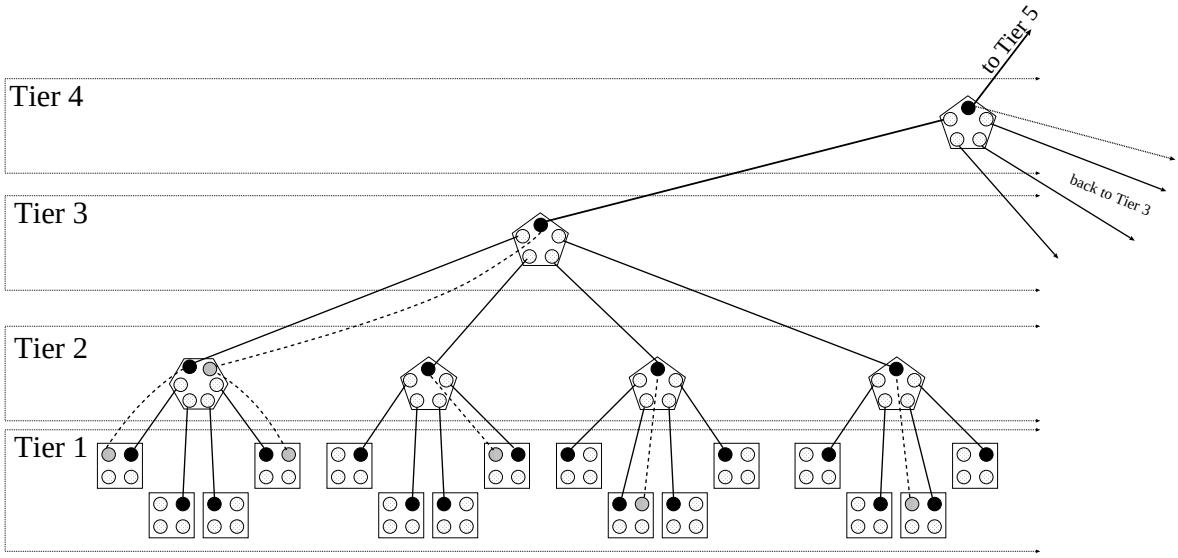

Figure 1: A fragment of a pyramidal democracy. For simplicity I assume $B = 4$. Polygons are nodes, and circles are their members. White circles are ordinary members (who can vote). Black circles are delegates (who cannot vote in their home node). Grey circles are metadelegates. Solid lines represent delegacy; dashed lines represent metadelegacy.

a single *delegate*, who will represent the consensus positions of that node on various issues.

3. The delegates of all Tier 1 nodes themselves self-organize into nodes, each with at least B members. The totality of all such nodes is called *Tier 2* of the pyramid.

4. The members of each Tier 2 node meet regularly to deliberate. Each Tier 2 node chooses a single delegate to represent its consensus positions.

5. These Tier 2 delegates then self-organize into nodes, each containing at least B members. The totality of these nodes is *Tier 3* of the pyramid.

6. We iterate this process. Clearly, in a society with K citizens, the nth tier will have at most K/B^{n-1} nodes. We stop when we reach a tier with less than B^2 members; thus the pyramid will have at most $\log_B(K)$ tiers. (For example, if $B = 10$, then a pyramid with $K = 100\,000\,000$ citizens would have at most seven tiers; the top Tier would have at most 100 members, each indirectly representing a six-tier sub-pyramid with at least 10 000 000 citizens.)

7. The top Tier (called the *Parliament*) will contain between B and B^2 individuals, and will be part of the legislative branch of the government.

This delegation structure is fairly elaborate. Two technical remarks are in order:

(a) Each member of a Tier $(t+1)$ node $\mathcal{N}_{t+1}$ is the delegate from some Tier t node $\mathcal{N}_t$, and is tasked with representing the position of $\mathcal{N}_t$ in $\mathcal{N}_{t+1}$. However, she must also be given discretion to modify her views during deliberation in $\mathcal{N}_{t+1}$. Presumably, the delegates to Tier $(t+1)$ will generally be the most serious and politically engaged members of Tier t; hence the quality and quantity of deliberation will be greater in Tier $(t+1)$ than in Tier t. Thus, if the consensus emerging in $\mathcal{N}_{t+1}$ contravenes the position of $\mathcal{N}_t$, then the $\mathcal{N}_{t+1}$ consensus should generally take priority (although $\mathcal{N}_t$ may withdraw its delegate from $\mathcal{N}_{t+1}$ if it is exceptionally frustrated by this outcome). A delegate must not merely be a mouthpiece for the opinions of her constituents; she must be authorized to deliberate, negotiate, and perhaps compromise on their behalf.

(b) Suppose that a Tier $(t+1)$ node $\mathcal{N}_{t+1}$ chooses member D as its delegate to Tier $(t+2)$. Recall that D is already the delegate to $\mathcal{N}_{t+1}$ from some Tier t node $\mathcal{N}_t$; presumably, D cannot fulfil both delegacy roles simultaneously. Thus, *another* member D' must be chosen from $\mathcal{N}_t$ to act as $\mathcal{N}_t$'s delegate in $\mathcal{N}_{t+1}$. If $\mathcal{N}_{t+1}$ must vote on some issue, then D' votes on behalf of $\mathcal{N}_t$, and D casts no vote (she no longer represents $\mathcal{N}_t$ within $\mathcal{N}_{t+1}$). For terminological clarity, I will say that D is a 'metadelegate' of $\mathcal{N}_t$.

Figure 1 portrays a fragment of this structure. Versions of pyramidal democracy have been proposed by Harrington (1659, 1660),[5] Arendt (1965, p.278), MacPherson (1977; §V(4A), p.108), and Etzioni (2004, p.188). A four-tier version, called the "communication tree", was a key feature of `MINERVA`, an experiment in electronically-mediated democracy in the early 1970s.[6] Berg and Paroush (1998) studied the Condorcet Jury Theorem in a simple model of pyramidal democracy (see §6). For the last decade, a three-tier form of pyramidal democracy (called *Participatory Democracy*) has been a central part of a system of 'participatory civic planning' in many cities in Brazil, starting with Porto Alegre.[7] Indeed, the United States Electoral College was originally intended as a three-tier pyramidal democracy (the third tier being the President), although in reality it functions nothing like this.

However, our proposal is somewhat different than these earlier models, because it involves more tiers, smaller nodes, and a more fluid structure. In particular:

- The purpose of each node is to share knowledge and ideas, and to build consensus through dialogue. Thus, each node must be small enough that intelligent multilateral dialogue is possible; say around seven to ten people. For this reason I propose setting $B := 7$. (In contrast, the earlier pyramid models involved only three or four tiers, with nodes containing hundreds or thousands of people).

[5] See (Harrington, 1659, Book III, Chapter I, items #6, #8, and #11), reprinted in (Pocock, 1977, pp. 666-667) and also (Harrington, 1660, Part I) reprinted in (Pocock, 1977, pp.810-812).

[6] See Etzioni (1971; §II.2) and Etzioni et al. (1975).

[7] See Santos (1998), Marquetti (2000), Fung and Wright (2001; §I.4), Lieberherr (2003), and Aragonés and Sánchez-Pagés (2009).

- Node membership is voluntary. Citizens choose a node based on ideological affinity, rather than being assigned a node based on geographical proximity. Also, a member can "defect" from a node at any time if she is dissatisfied with the consensus position of that node (but until she joins another node, the defector is effectively voiceless in the political process). Finally, the other members of a node can expel an undesirable member, and can reject would-be members from joining their node.

- Delegates can be replaced at any time. If they are dissatisfied with her performance, the members of a Tier k node $\mathcal{N}_k$ can recall their delegate from Tier $(k+1)$ and replace her with a new delegate. (However, if D is a metadelegate from $\mathcal{N}_k$ to a Tier $(j+1)$ node $\mathcal{N}_{j+1}$ for some $j > k$, then $\mathcal{N}_k$ *cannot* recall D, because D is no longer the official representative of $\mathcal{N}_k$. Only the intermediary Tier j node $\mathcal{N}_j$ can recall D, because D is actually $\mathcal{N}_j$'s delegate).

The rest of this paper consists of fourteen short sections commenting on various aspects of PD. These sections are logically independent, and can be read in any order.

1 Incentives for participation. Leib (2004) notes that deliberative proposals which rely upon voluntary participation suffer from a serious problem: self-selection bias. Deliberation costs time and effort —a cost which increases exponentially as one ascends to higher tiers in the pyramid. Certain socioeconomic groups might be underrepresented because members of those groups will not desire —or cannot afford —to incur this cost. Participation in Tier 3 will likely be a time commitment comparable to a part-time job; participation in Tier 5 will be more like a full-time job. A low-wage worker (especially in a single-income family) cannot afford to lose income (and perhaps job security) by taking time away from her real job for such deliberative time commitments. Likewise, a primary caregiver for young children (or dependent adults) simply cannot afford to neglect these responsibilities to participate in lengthy deliberation. At the opposite extreme, members of highly paid or highly rewarding professions (e.g. doctors, lawyers, engineers, academics) may also opt out of deliberation, for the same reason that many academics shirk administrative duties within their own universities.

If certain socioeconomic groups are underrepresented in the higher tiers of the pyramid, then the the resulting policies may be biased against these groups, and the democratic legitimacy of PD is compromised. If the most highly educated and intellectually accomplished citizens opt out of deliberation, then the supposedly meritocratic tendencies of PD are somewhat undermined.

Leib's (2004) solution is to make participation in deliberative bodies *compulsory*, in exactly the same way that participation in legal juries is compulsory. Randomly selected citizens would be served with a notice of 'deliberative jury duty', with strict penalties for noncompliance. Compulsory participation is appropriate for

Leib's deliberative juries, which only involve a small fraction of the population at any moment in time. However, it is clearly inappropriate for PD, which involves the entire population at all times. A delegate chosen by a lower-tier node must be willing to serve in a higher tier; compulsory service is not only an infringement on her liberty, but also may lead to inferior-quality deliberation, due to grudging and resentful participation.

Instead of *compelling* participation, we should provide sufficient incentives to *induce* participation. Participation in higher tiers of the pyramid already offers many 'noneconomic' incentives: it confers status, prestige, and political influence; it satisfies one's sense of civic duty and social responsibility; and it offers the politically ambitious the prospect of eventual promotion to Parliament. If these noneconomic incentives are insufficient to induce adequate participation, then we must supplement them with explicit economic incentives, structured so as to make deliberative duty equally attractive to all socioeconomic groups. We can do this by paying each participant i of Tier $t \geq 2$ a stipend of size $C_t W_i$, where W_i is the wage income of individual i during previous year (as reported on her income tax filing), and $C_2 \leq C_3 \leq \ldots \leq C_T$ are positive constants, chosen such that a fraction of C_t of her wage income is sufficient to compensate an individual for the costs (in time and effort) of participating in Tier t.[8]

The values of $C_2, \ldots, C_T$ can be be 'tuned' to elicit the desired level of participation in the pyramid. Let N_t be the population of Tier t; then (N_t/N_{t-1}) estimates the fraction of people in Tier $(t-1)$ who are willing to participate in Tier t. Suppose we decide that the average node should have B' people (for some $B' \geq B$); then we should see $(N_t/N_{t-1}) \approx (1/B')$. If $(N_t/N_{t-1}) < (1/B')$, then this means there is insufficient incentive to participate in Tier t, so we increase C_t. If $(N_t/N_{t-1}) > (1/B')$, then there is excessive incentive to participate in Tier t, so we decrease C_t.

To visualize how this might work, suppose we approximate C_t by the time required to participate in Tier t, relative to the 40 hours per week required by a full-time job. For example, suppose that participation at Tier 5 or above requires 40 hours per week, while at Tier 4 or below, each tier requires one fifth the time of the tier above it (so that Tier 4 requires 8 hours per week, Tier 3 requires roughly 7 hours per month, Tier 2 requires roughly 80 minutes per month, and Tier 1 requires 3 to 4 hours per year). Then we might set $C_t = 1$ for all $t \geq 5$; set $C_4 = 1/5$, $C_3 = 1/25$, and $C_2 = 1/125$.

For simplicity, suppose each node has ten members, and assume an electorate of $10^8 = 100\,000\,000$ citizens; then Tier t will have 10^{9-t} participants, for all $t = 1, ..., 7$ (Tier 7 being a Parliament with 100 members). Let $\overline{W}$ be the average wage across all voters, and assume that $\overline{W}$ is also the average wage within each tier (i.e. assume that no economic stratification occurs between tiers). Then the total monetary cost

[8] A more egalitarian scheme would pay each participant of Tier t a stipend $C_t \overline{W}$, where $\overline{W}$ is the average wage across all citizens. However, this scheme risks offering inadequate deliberative incentives to high-wage citizens, while offering excessive incentives to low-wage citizens.

of this compensation scheme will be:

$$\left(\frac{10^7 - 10^6}{125} + \frac{10^6 - 10^5}{25} + \frac{10^5 - 10^4}{5} + 10^4\right)\overline{W} \quad = \quad 136\,000 \cdot \overline{W}.$$

(We subtract 10^6 from 10^7 so that participants of Tier 3 are not double-counted as participants of Tier 2, and so on). The gross *economic* cost is presumably *double* this figure, because the time individuals spend in deliberation is time they do *not* spend in economically productive activities (which, by assumption, generate a per capita value of $\overline{W}$, assuming a competitive labour market). Thus, the compensation scheme, plus lost productivity, costs $272\,000 \cdot \overline{W}$, or approximately 0.272% of the total labour productivity of the economy (which is $10^8\,\overline{W}$, by assumption).

Note that we have set $C_1 = 0$, for three reasons: (1) The time commitment of Tier 1 is so small (a few hours per year) that it hardly seems worthy of compensation. (2) By assumption, Tier 1 involves the entire population. It seems somewhat circular to tax this group and then give the money right back. (3) It would be impossible to monitor such a large group to ensure that everyone 'earned' their deliberative stipend (say, by showing up to meetings); too many people would exploit the system to get free money from the government.

However, if it turns out that even Tier 1 requires some stipend to induce universal participation, and we could somehow solve the monitoring problem, then we could set $C_1 = 1/625$ in the above example; even then, the total cost of the compensation scheme would be only 0.56% of the total labour productivity of the economy.

In this example, it might seem peculiar that approximately 10 000 people (in Tier 5 and above) become public employees with 'deliberation' as their full-time job. However, these people will play roles quite similar to those played by lobbyists and legislative aides in current governments: gathering and analyzing information, preparing and critiquing policy documents, advocating on behalf of various interest groups, and of course, briefing and consulting their constituents. Each Tier 6 node effectively becomes the 'staff' of its delegate in Parliament, and each Tier 5 node effectively becomes the 'staff' of its delegate in Tier 6.

What of incentives for people outside of the labour force —for example, the primary caregivers of children or dependent adults? The simplest solution is to impute to these people a wage equal to the monetary value of their unpaid work —for example, the current market price of good quality daycare or elder care facilities —and then pay them a fraction of this imputation according to the above compensation scheme. With this money, they can afford to purchase part-time care for their dependents, allowing them to participate in deliberation without hardship.

2 Stability. Pyramidal democracy is extremely fluid and responsive to the electorate. At any time, a dissatisfied node can replace its delegate. A dissatisfied voter can defect from a node (or be expelled), and too many defections/expulsions can force the node to dissolve. This fluidity and responsiveness is an asset, but

it can also lead to excessive political instability: it is possible for a 'cascade' of delegate replacements or defections/dissolutions to propagate up the hierarchy of the pyramid. I will now construct a simple mathematical model to study this problem.

2.1 Delegate Replacement. I first distinguish between two kinds of delegate replacement. An *endogenous* replacement occurs when the majority of the members of a node become dissatisfied with their delegate and replace her. In a node $\mathcal{N}$ in Tier 2 or higher, there can also be an *exogenous* replacement: this occurs when one or more members of $\mathcal{N}$ (each being a delegate from a lower tier) are themselves replaced, and this changes the balance of power in $\mathcal{N}$ so as to precipitate an immediate delegate replacement in $\mathcal{N}$. I make the following assumptions:

(a) In each node n, the endogenous replacement of delegates is a continuous-time Poisson process with some rate $v_n > 0$, where v_n measures the endogenous political 'volatility' of node n. (Nodes of higher volatility replace delegates more frequently.) The endogenous replacements in distinct nodes are independent processes.

(b) The volatilities of all nodes are independent random variables. The volatilities of all nodes in Tier t have the same distribution, with mean $\overline{v}_t$.

(c) Whenever a node at Tier t replaces its delegate, there is a probability $\alpha_t > 0$ that this triggers an exogenous replacement event in the next higher tier.

If $\mathcal{N}$ is a Tier 2 node, then assumptions (a)-(c) imply that the delegate replacements (both endogenous and exogenous) in $\mathcal{N}$ obey a Poisson process with rate

$$v^*_{\mathcal{N}} \quad := \quad v_{\mathcal{N}} + \alpha_1 \sum_{n \in \mathcal{N}} v_n. \tag{1}$$

Inductively, suppose $\mathcal{N}$ is a Tier T node. For all $t \in \{1, \ldots, T-1\}$, let $\mathcal{N}_t$ be the set of all Tier t nodes below $\mathcal{N}$. Then the replacements in $\mathcal{N}$ obey a Poisson process with rate $v^*_{\mathcal{N}}$, where $v^*_{\mathcal{N}}$ is defined inductively by:

$$\begin{aligned} v^*_{\mathcal{N}} \;&=\; v_{\mathcal{N}} + \alpha_{t-1} \sum_{n \in \mathcal{N}_{t-1}} v^*_n \quad = \quad \cdots\cdots \\ &=\; v_{\mathcal{N}} + \alpha_{t-1} \sum_{n \in \mathcal{N}_{t-1}} v_n + (\alpha_{t-1}\alpha_{t-2}) \sum_{n \in \mathcal{N}_{t-2}} v_n + \cdots + (\alpha_{t-1} \cdots \alpha_2 \alpha_1) \sum_{n \in \mathcal{N}_1} v_n. \end{aligned} \tag{2}$$

Let N be the average node size, suppose the pyramid has T tiers below the Parliament, and suppose $\alpha_1 \approx \alpha_2 \approx \cdots \approx \alpha_{T-1} \approx \alpha$ for some constant α. If $\mathcal{N}$ is in Tier T (i.e. its delegate is in Parliament), then the Law of Large Numbers approximates equation (2) by

$$v^*_{\mathcal{N}} \quad \approx \quad v_{\mathcal{N}} + \alpha N\, \overline{v}_{T-1} \;+\; \alpha^2 N^2\, \overline{v}_{T-2} \;+\; \cdots \;+\; \alpha^{T-1} N^{T-1}\, \overline{v}_1. \tag{3}$$

For example, suppose $\overline{v}_1 \approx \overline{v}_2 \approx \cdots \approx \overline{v}_T \approx \overline{v}$ for some constant $\overline{v}$. In equation (3), if $\alpha \ll 1/N$, then $v^*_{\mathcal{N}} \approx \overline{v}$ for any node $\mathcal{N}$ —all nodes are about equally volatile. If $\alpha \approx 1/N$, then $v^*_{\mathcal{N}} \approx T\overline{v}$. However, if $\alpha \gg 1/N$, then $v^*_{\mathcal{N}} \approx (\alpha N)^{T-1}\overline{v}_1$, so Tier T nodes are exponentially more volatile than Tier 1 nodes.

Thus, the membership of Parliament will be reasonably stable as long as $\alpha_1, \ldots, \alpha_{T-1}$ and $\overline{v}_1, \ldots, \overline{v}_T$ are small enough. To ensure this, I suggest the following policies:

- A Tier t node must wait W_t days before replacing its delegate. (This creates a 'cooling period' in which a reconciliation might occur). Increasing W_t decreases $\overline{v}_t$.

- When a Tier t node $\mathcal{N}_t$ replaces its delegate, there is an I_t day 'initiation period' during which the new delegate cannot vote in the Tier $(t{+}1)$ node $\mathcal{N}_{t+1}$. (Thus, $\mathcal{N}_t$ is 'penalized' by being disenfranchised for I_t days; this discourages capricious replacement of delegates).[9] Increasing I_t decreases both $\overline{v}_t$ and α_t.

$W_1, \ldots, W_T$ and $I_1, \ldots, I_T$ are control parameters with which to 'tune' the stability of the pyramid. If there are overly frequent delegate replacements in Tier t, then we can decrease $\overline{v}_t$ and/or α_t by increasing W_t and/or I_t. (However, we must keep W_t and I_t as small as possible, to maximize the accountability of delegates to their constituents; there is a natural tradeoff between responsiveness and stability.)

2.2 Defection and Dissolution. If (through defections and expulsions) a node ever drops below the minimum size B, then it has a brief 'grace period' to replace the defector(s) and satisfy the minimum size requirement —otherwise the node is dissolved, and its members must join other nodes or be disenfranchised. For a node with n remaining members (with $n < B$), I suggest a 'grace period' of $4^{n-B}\,G$ days, where G is a constant. For example, suppose $B = 7$ and $G = 128$; then a 6-member node has a grace period of 32 days, a 5 member node has 8 days, a 4-member node has 2 days, and a node with 3 or less members dissolves immediately.[10]

To insure against such a 'membership crisis', most nodes will probably retain an excess of members over the minimum B (so that no single member can extort concessions by threatening to defect). For example, if $B = 7$, then most nodes will have nine or ten members. There is no maximum size to nodes. However, increasing the size of a node dilutes the effective political power of each member, so members have an interest in keeping nodes small. Thus, the size of the node represents a

[9] Of course, many issues in $\mathcal{N}_{t+1}$ will be be decided through deliberation, not voting (see §7). However, a new delegate from $\mathcal{N}_t$ will be less influential in these deliberations, until she gains the trust and respect of other members of $\mathcal{N}_{t+1}$; this is another way in which $\mathcal{N}_t$ is temporarily 'disenfranchised' when it switches delegates.

[10] Thus, we rapidly eliminate nodes where a small core of extremists or lunatics drive away all the other members; however, we give more time to nodes where one extremist defects from an otherwise reasonable group.

trade-off between greater influence for each member, versus greater stability for the node as a whole.

A node can dissolve in two ways. An *endogenous* dissolution occurs when some member defects, reducing the node's population below B, and the node is unable to replace the defector within the grace period. A node $\mathcal{N}$ in Tier 2 or higher can also suffer *exogenous* dissolution: this occurs when some member D of $\mathcal{N}$ is a delegate from a lower-tier node n, and the node n dissolves, so that D must immediately leave $\mathcal{N}$, reducing $\mathcal{N}$'s population below B and indirectly causing the dissolution of $\mathcal{N}$ as well. For example, if a Tier 1 node dissolves due to defections, then its delegate immediately leaves the corresponding Tier 2 node; this could compromise the viability of the Tier 2 node, leading to *its* dissolution, and so forth. I call this a *dissolution cascade*. A high frequency of dissolution cascades could compromise the stability of the pyramid.

Suppose the population of each node fluctuates according to a stationary, continuous time Markov process. Then the dissolution of each node occurs according to a Poisson process. I make the following assumptions:

(a) The endogenous dissolution of node n occurs according to a continuous-time Poisson process with some rate $v_n > 0$, where v_n measures the endogenous political 'volatility' of node n. (Nodes with higher volatilities are more likely to dissolve). The endogenous dissolutions of distinct nodes are independent processes.[11]

(b) The volatilities of all nodes are independent random variables. The volatilities of all nodes in Tier t have the same distribution, with mean $\overline{v}_t$.

(c) Whenever a node at Tier t dissolves, there is a probability $\alpha_t > 0$ that this triggers an exogenous dissolution in the next higher tier.

The resulting mathematical model is formally identical to the model of delegate replacement in §2.1.[12] The conclusion is the same: as long as the values $\alpha_1, \ldots, \alpha_{T-1}$ and $\overline{v}_1, \ldots, \overline{v}_T$ are small enough, dissolution cascades will be rare, and the pyramid will be relatively stable. To make these values small enough, I suggest the following policies:

[11] This is somewhat unrealistic: defections and dissolutions may occur in response to a polity-wide controversy or crisis, which would simultaneously impact many nodes.

[12] Note that this simple model is actually rather pessimistic. For example, it does not recognize that larger nodes should be less volatile, as they can lose several members before becoming nonviable (although this is somewhat mitigated by the greater chance of dissensus within a larger group). Also, the model does not recognize that higher-tier nodes should be less volatile, (i.e. $\overline{v}_1 > \overline{v}_2 > \overline{v}_3 > \cdots$), because delegates are chosen from lower-tier nodes (and accepted into higher-tier nodes) partly because of their 'reasonable' political views and their skill at consensus-formation (although this is somewhat mitigated by the greater chance of dissensus within the more ideologically diverse nodes found in higher tiers).

- As suggested above, if the population n of a Tier t node drops below B, then this node has a 'grace period' of $4^{n-B}\,G_t$ days to recruit new members before it is dissolved. Increasing G_t will decrease $\overline{v}_t$; if $t \geq 2$, then it will also decrease α_{t-1}.
- A Tier t node member must wait W_t days before defecting. (This introduces a 'cooling period', during which time a reconciliation might occur; it also gives the node time to find a replacement for the defector). Increasing W_t will decrease $\overline{v}_t$.
- If a Tier t node member defects, there is an D_t day period before the defector can vote in a new node. (Thus, the defector is 'penalized' by being disenfranchised for D_t days —see also footnote #9. This discourages capricious defections.) Increasing D_t will decrease $\overline{v}_t$.

If the pyramid exhibits too many dissolutions in Tier t, then we can decrease $\overline{v}_t$ and/or α_t by increasing G_t, W_t and/or D_t. (However, it is important to keep these parameters as small as possible, to give citizens maximal mobility to migrate between nodes; again we face a tradeoff between responsiveness and stability.)

3 Pyramidal meritocracy. In a representative democracy, the delegate chosen to represent each constituency should be the most competent candidate —i.e. the most intelligent, knowledgeable, ethical and dedicated. However, conventional electoral systems often fall far short of this ideal, for several reasons:

(C1) Electoral success depends on advertising, and advertising requires a lot of money, so conventional elections heavily favor the interests of the wealthy.[13] Political parties have emerged as the most efficient way to obtain and deploy campaign funds, so they now entirely control the nomination process. Thus, candidates are drawn from a small, exclusive clique of party apparatchiks, and are selected not for their competency, but for their charisma, 'electability', and partisan loyalty.

(C2) In a conventional election, a voter is often presented with very few (e.g. two or three) candidates, who represent widely different ideologies. Of these, she finds even fewer (e.g. one or less) ideologically palatable. Thus, after accounting for ideology, she is left with no discretion to optimize on the basis of candidate competency.

(C3) Voters have no opportunity for long-term personal interaction with the candidates. Instead, voters base their opinions on campaign advertising, television sound bites, and the facile 'analysis' of media pundits.

[13] The influence of political advertising (and thus, campaign financing) on elections has been extensively studied; see Morton and Cameron (1992), Austen-Smith (1997), and (Mueller, 2003, §20.2-20.3) for summaries.

(C4) Even if voters had a wide variety of candidates to choose from, and easy access to abundant and accurate information about each one, many voters would still make ignorant and irrational decisions [see e.g. Schumpeter (1942 [1976])].

(C5) Furthermore, voters are usually too apathetic to correct these deficiencies, because of what Downs (1957) calls 'rational ignorance'. Voters have little incentive to spend time and money to become better educated or informed, for the same reason that they have little incentive to vote in the first place: because each voter knows that her vote has only an infinitesimal effect on the outcome of the election, and even less influence on public policy.

(C6) Even if, despite reasons (C1)-(C5), a conventional election somehow acted as a mechanism to select high-quality candidates, conventional electoral systems involve only one 'iteration' of this mechanism.

In contrast, pyramidal democracy should do a much better job of selecting the most competent candidates for Parliament, for the following six reasons:

(P1) PD is economically egalitarian: everyone has equal opportunity to ascend the pyramid, regardless of her wealth or political connections. There is no longer any role for campaign financing, because there are no longer any election campaigns. Instead of being indispensable sources of campaign funds, parties will revert to being mere debating clubs or advocacy groups, with no real political clout.

(P2) Nodes are ideologically homogeneous (except perhaps at the very top tiers), because they self-organize on the basis of ideological affinity. Thus, the delegacy candidates in each node are ideologically similar, so that the choice amongst them will be made primarily based on competency, not ideology.

(P3) Each delegacy candidate is extremely well-known to her 'constituents' (i.e. fellow node members), because they have discussed policy and personally interacted with her (possibly over a long period). Hence, presumably, these constituents can make a well-informed choice, and choose the most competent candidate as their delegate.

(P4) Because of reasons (P1)-(P3), the delegates who appear in Tier 2 will generally be the most competent members of Tier 1. Likewise, those in Tier 3 will generally be the most competent members of Tier 2. Inductively, each successive Tier will generally contain the most competent members of the previous Tier. The more competent the members of a Tier become, the more willing and able they will be to choose the most competent amongst themselves to ascend to the next Tier.

(P5) Furthermore, each citizen has a strong incentive to educate herself and participate intelligently, because her participation has a clear and significant influence on the decisions made by her node. It is no longer 'rational' to be ignorant. (See §4).

(P6) To the extent that delegate election is a mechanism which selects high-competency candidates, pyramidal democracy involves several iterations of this mechanism, and each iteration further winnows the pool of candidates. Suppose we disregard reasons (P1)-(P5) and suppose that nodes are no better at choosing their delegates than conventional elections are at choosing legislators; even then, multiple iterations of this process will still improve the outcome.

4 Downsian behaviour. Argument **(P5)** of §3 claimed that, unlike the 'Downsian voter', a PD voter will participate seriously because she has meaningful influence within her node. However, a low-tier node as a whole still has only infinitesimal influence on the polity, so won't Downsian apathy and ignorance still be optimal for a rational voter?

Not entirely, because PD is meritocratic in a way that conventional democracy is not. In a conventional democracy with millions of voters, it is a mathematical fact that each voter has only a microscopic chance of casting a deciding vote; nothing she can do can change this. However, in PD, her influence could be greatly magnified, *if* she has good ideas and can convince other people of their value. If she can influence her node with compelling, rational, fact-based arguments, and her delegate can then influence *his* node with some version of these arguments, and so on, then a single voter could indirectly have a huge influence on the eventual political outcome. (Better yet, if she is sufficiently talented and ambitious, she could *become* the delegate of her node, and possibly nodes at higher Tiers.)

Of course, for the vast majority of the electorate, this meritocratic magnification of influence will not occur. But the prospect of such meritocratic magnification will probably motivate many citizens to try hard to formulate compelling, rational, factual arguments and participate seriously in their node's deliberations.

5 Suffrage. It is generally acknowledged that children and the mentally infirm should not vote. Presumably, they should not participate in other deliberative institutions either. However, any legal distinction between 'child' and 'adult' or between 'firm' and 'infirm' is arbitrary and leads to intellectually indefensible inconsistencies. For example, in many democracies, the voting age is eighteen; yet there certainly exist thoughtful, well-informed, politically engaged youths who may be more competent to vote than many ignorant, politically apathetic adults. Presumably, the age of eighteen is chosen to roughly coincide with the completion of high school. However, an adult who quit school in grade nine can still vote; indeed, even illiterate and/or innumerate adults have the franchise, and any proposal to restrict suffrage

to people with some minimum educational level is seen as highly undemocratic. The distinction between mentally 'firm' and 'infirm' (as decided by psychiatrists) is even more subjective and ambiguous, and transfers troubling political power to the psychiatric profession.

PD provides a natural solution to this problem. We can allow all citizens —even children and the mentally infirm —to participate in Tier 1 of the pyramid (perhaps in familial nodes). The meritocratic mechanisms discussed in §3 will naturally identify incompetent citizens and curtail their political influence. Presumably children and the mentally infirm will *not* be chosen as delegates to Tier 2. However, by participating in Tier 1, these citizens can still communicate their preferences through their delegate, and thus we ensure that society takes these preferences into account in legislation.

6 Aggregative vs. epistemic democracy. Most political controversies involve two dimensions: *positive* disagreements about objective matters of fact, and *normative* disagreements about subjective matters of ethics, preferences, and values. Arrovian social choice theory views democracy as largely *aggregative*: if we assume all positive questions have been resolved (i.e. all agents can perfectly predict the consequences of all policy options), then the remaining disagreements are purely *normative* —the role of democracy is then to 'aggregate' the disparate values/preferences of the electorate, so as to make the most collectively agreeable (or least disagreeable) normative choice.

However, there is another, *epistemic* interpretation of democracy, manifest in Condorcet's Jury Theorem and its generalizations.[14] In this interpretation, we assume consensus on normative issues; instead, democracy is seen as kind of distributed cognition which, with high probability, produces correct answers to *positive* questions. I implicitly adopt this interpretation in §3.

To resolve a political dispute, then, the best method is to **(1)** clearly separate the normative issues from the positive issues in the dispute; **(2)** resolve the positive issues using the best epistemic mechanism available, and finally **(3)** resolve the normative issues using the best aggregative mechanism available. Step (1) itself is a *positive* question, and is best decided by the epistemic mechanism.

Ultimately, PD is probably no better than any other aggregative mechanism at resolving purely normative disputes in Step (3). However, by facilitating deliberation and harnessing the knowledge and creativity of the entire electorate, while meritocratically magnifying the influence of the most competent participants (see §3), PD provides a superior epistemic mechanism for Steps (1) and (2).

Berg and Paroush (1998) extend Condorcet's Jury Theorem to something very

[14]See Young (1988, 1995), Ben-Yashar and Paroush (2001) and List and Goodin (2001) for CJT with $N \geq 3$ alternatives; see Paroush (1998) for heterogeneous voters, and see Grofman et al. (1983, 1989), Shapley and Grofman (1984), Berg (1994) and Ladha (1995) for correlated voters. For more on 'epistemic' democracy, see Estlund (1997) or List and Goodin (2001).

similar to pyramidal democracy (which they call a *hierarchy*). Each Tier 1 node selects one of two options A or B by majority vote (with A being 'correct', and with independent, identical voters). Inductively, each Tier $(k+1)$ node holds a vote, in which each delegate simply recapitulates the majority decision from her constituency in Tier k. If the population is fixed, Theorem 4 of Berg and Paroush (1998) states that adding another tier to the hierarchy *decreases* the probability that A will be chosen. Indeed, the probability of A is highest in a hierarchy with only one tier: a direct democracy.

This seems to refute our claim about the epistemic superiority of PD. However, the Berg-Paroush hierarchy ('BPH') is not really a model of PD at all, because it assumes that each delegate simply parrots the position of her constituency; there is no room for deliberation or negotiation in nodes above Tier 1. In fact, the 'delegates' in the BPH serve no purpose at all; they could be entirely replaced with electronic votes and tallied by a computer. In contrast, PD assumes that the delegates (especially in upper tiers) engage in extensive deliberation, and are ultimately responsible for most of the details of complicated decisions. In §3, I argued that PD is effective in populating the upper tiers (especially Parliament) with highly 'competent' delegates; in the BPH, the issue of delegate competency is irrelevant.

Unlike the voluntary, self-organized nodes of PD, the BPH nodes are exogenous and involuntary (but since they have no deliberative function, this is again irrelevant). Finally, in the BPH, there is no room for grassroots policy innovation, because the alternatives A and B are predetermined and immutable. Thus, the BPH does not utilize the knowledge and creativity of the electorate; it merely tallies their votes.

Nevertheless, the BPH model provides a cautionary tale. It says that PD can be a superior form of epistemic democracy only if we fully exploit its capacity for meritocracy, deliberation, and innovation. If PD is merely used as a vote-counting device (like the US Electoral College), then it is a poor substitute for a direct democracy.

7 Bargaining and consensus. In a conventional majority/plurality vote, it is possible for a large minority (or even a majority) to be strongly dissatisfied with the outcome. This undermines the legitimacy of the decision and may lead to problems with implementation and compliance. Representative democracies are also vulnerable to 'voting paradoxes', such as those of Anscombe (1976) and Ostrogorski (1902 [1970]); see (Nurmi, 1998, 1999). To mitigate these problems, many elaborate voting systems have been proposed, but every ordinal voting system is vulnerable to inconsistent and pathological outcomes (by Arrow's Impossibility Theorem) and is manipulable by 'strategic voters' (by the Gibbard-Satterthwaite theorem).[15] Voting systems are also prone to 'Condorcet cycles', creating political instability and

[15] See (Riker, 1982, Ch.5-6) or (Mueller, 2003, Ch.24) for a summary of these results.

possible manipulation through agenda control.[16]

However, in the sub-parliamentary nodes of the pyramid, most political decisions (e.g. selection of delegates, endorsement of policy proposals) will *not* be made by voting. Instead, they will be made through a process of deliberation and bargaining leading to unanimous or near-unanimous consensus. This is for two reasons:

1. Each node is small (e.g. ten people) so multilateral discussion and negotiation is feasible. Node members can creatively compromise between conflicting positions, until a mutually acceptable arrangement is found.

2. Node membership is voluntary; a dissatisfied member can 'defect' at any time.

Reason #2 means that a node member will not be satisfied if she is out-voted on an important issue; she will defect to some other node which is more congenial to her views. Thus, on every issue, each node must struggle to achieve a consensus which is at least tolerable to all of its members, or the node will cease to exist. Fortunately, Reason #1 means that this struggle will usually be successful.

Of course, unanimous consensus is sometimes impossible, because the individual positions are too divergent. This becomes more likely at higher tiers of the pyramid, where nodes must bring together delegates with increasingly different views, and becomes a virtual certainty in Parliament (where Reason #2 ceases to apply: defection is not an option). Furthermore, each delegate is constrained to represent the consensus position of her constituency, and may only have limited discretion to compromise. Consensus is also less likely for urgent decisions which leave no time for negotiations. Finally, on some issues, there is an exogenous, finite ballot of alternatives, and it is not possible to introduce new alternatives through 'creative compromise'. Nevertheless, on most decisions in sub-parliamentary nodes, I expect to see supermajoritarian support, often approaching unanimity. Supermajoritarian decisions are far less likely to exhibit voting paradoxes[17], and are less vulnerable to Condorcet cycles[18]. Even when consensus does not obtain, deliberation may make Arrovian pathologies less likely, by encouraging the formation of 'single-peaked' preferences.[19]

8 Voting procedures When a vote *is* required, what is the optimal voting procedure? For a choice between two alternatives, May's (1952) theorem suggests simple majority vote is the optimal choice. However, with more than two alternatives, plurality vote has serious deficiencies; in this case, the 'optimal' voting

[16]See (Riker, 1982, Ch.7), (Austen-Smith and Banks, 1999, Ch.6), or (Mueller, 2003, §5.12.1) for a summary.

[17]See Nurmi and Uusi-Heikkilä (1985), Wagner (1983, 1984) and Deb and Kelsey (1987). See (Nurmi, 1998, §3.2) or (Nurmi, 1999, §7.6) for summaries.

[18]See Greenberg (1979), McKelvey and Schofield (1986), Caplin and Nalebuff (1988, 1991), Weber (1993), Banks (1995), and Saari (1997). See (Mueller, 2003, §5.8.2-5.8.3) for summary.

[19]See e.g. Knight and Johnson (1994), Miller (1992, 2003), or Dryzek and List (2004).

procedure is still an open research question (Arrow et al., 2002), and the answer (when there is an answer) depends on the nature of the issue being decided. For example, to aggregate *ordinal* preferences on a purely normative issue, the Borda count is probably the best choice.[20] However, to aggregate *cardinal* preferences (i.e. 'utility functions') on a normative issue, a social choice procedure like *relative utilitarianism* (also called 'range voting')[21] seems more appropriate; this would probably be the best mechanism for electing delegates, for example. With strategic voters, relative utilitarianism tends to devolve into *approval voting* (Brams and Fishburn, 1983). If this is a concern, then the Groves-Clarke *pivotal mechanism*[22] can elicit honest revelation of preferences (but only to the extent that 'utility' can be measured in monetary units).

To decide *positive* issues (what I called 'epistemic' democracy in §6), different procedures are appropriate. For example, if we wish to answer a purely quantitative question (e.g. estimate some physical parameter), and we assume each voter perceives the correct answer, plus an independent, symmetrically distributed random error, then the Law of Large Numbers says the *mean* of all voter opinions will be the best estimator. On the other hand, Balinski and Laraki (2007) demonstrate that the *median* opinion is preferable, if one requires certain consistency and strategy-proofness properties. To estimate probabilities, we should use methods of *statistical opinion pooling* (Genest and Zidek, 1986). On the other hand, if the positive issue can be formulated as a sequence of yes/no questions (with some logical consistency constraints), then it is a problem of *judgement aggregation* (List and Puppe, 2009). In this case, if the space of feasible truth-valuations satisfies certain geometric conditions (technically, if it is a *median space*), then 'propositionwise majority vote' is the optimal judgement aggregation procedure (Nehring and Puppe, 2007); however, for other judgement aggregation problems, majority vote tends to produce logically inconsistent outcomes, and some other procedure must be used.

In short, the optimal voting procedure depends on how the issue is framed, and what sort of decision one hopes to achieve. Thus, it is inappropriate to legislate some standard voting procedure to be used by all nodes at all times. On the other hand, we cannot allow nodes complete discretion to choose voting procedures on an *ad hoc* basis; then the voting procedures *themselves* must be decided through some voting procedure, and so on, leading to an infinite regress. The best approach is to identify some broad classes of decision problems, such as the the six classes identified above, and impose a voting rule for each class. (For example:"binary → majority vote"; "normative & ordinal → Borda count"; "normative & cardinal → relative utilitarianism"; "positive & quantitative → median rule", etc.) Then give each node the discretion on how it wants to classify each issue it confronts.

However, it is important to recognize that, aside from Parliament, the primary

[20]See Young (1974) and Saari (1990, 2000).
[21]See Dhillon (1998), Dhillon and Mertens (1999), or Smith (2000).
[22]See e.g. Tideman (1977) or (Mueller, 2003, §8.1)

purpose of each node is *not* to vote: it is to deliberate, to aggregate information and creativity, and to seek consensus. As I emphasized in §6, pyramidal democracy must be construed as a *deliberation* mechanism, not merely as an elaborate voting device.

9 Public vs. private deliberation. Public deliberation (i.e. before an audience) tends to be superficial, adversarial and demagogic. It also makes compromise difficult, because it is embarrassing for speakers to admit mistakes or modify their position; see e.g. Stasavage (2007). Private deliberation allows serious, honest discussion without rhetorical theatrics, but also creates opportunities for corruption, collusion, and co-option; see e.g. (Gutmann and Thompson, 1996, Ch.3). Good deliberative institutions must involve both private and public deliberation. As observed by Elster (1998a),

> The process ought to contain elements of both secrecy (committee discussion) and publicity (plenary assembly discussions). With total secrecy, partisan interests and logrolling come to the forefront, whereas full publicity encourages grandstanding and rhetorical overbidding. Conversely, secrecy allows for serious discussion, whereas publicity ensures that any deals struck are capable of withstanding the light of day. (p.117)

For example, Leib's (2004) deliberative juries convene *in camera*, with the anonymity of the jurors protected both during and after the deliberations. This allows private deliberation, and shields jurors from lobbyists, propaganda, threats, and bribes. However, a complete (anonymized) record is made of all the jury's deliberations, and is publicly disclosed. This public record keeps the jury honest, enhances the legitimacy of its decisions, and provides insight into the jurors' beliefs and intentions (useful when the courts must later interpret legislation created by a deliberative jury).

PD implements the private/public dichotomy differently. It is neither possible nor desirable for the members of a pyramidal node to remain anonymous: they are the elected delegates of lower tiers, and must remain accountable to their constituents. However, corruption and cronyism are unlikely, precisely because each delegate's mandate can be withdrawn at any time by her constituents, if her performance is unsatisfactory.

It is probably not feasible to make complete records of deliberations in the millions of nodes in Tiers 1, 2 and 3. However, these deliberations should be held openly, so that the constituents of each delegate can monitor her performance. Above some level (say, Tier 4), deliberations will become much more substantive, while the number of nodes will be more manageable (i.e. less than 100,000). It will then be both feasible and desirable to keep complete (non-anonymized) records of all deliberations. Normally, these records will be immediately available for the scrutiny

of each delegate's constituents. However, in exceptional circumstances, a Tier t node $\mathcal{N}_t$ may choose to meet *in camera*, to enjoy the aforementioned benefits of private deliberation. This may also be necessary if $\mathcal{N}_t$ wishes to prepare a 'bargaining position' which its delegate will advocate in Tier $(t+1)$. In either case, node $\mathcal{N}_t$ may choose to withhold the records of its deliberations for up to two years before releasing them.

Even decisions made *in camera* are subject to public scrutiny, however. First, each member of $\mathcal{N}_t$ is a delegate from some Tier-$(t–1)$ node $\mathcal{N}_{t-1}$, and must explain and justify $\mathcal{N}_t$'s decision to her constituents (disclosing some details of $\mathcal{N}_t$'s *in camera* deliberations if necessary). Her justification then becomes part of the public record of deliberations in $\mathcal{N}_{t-1}$, available to the Tier-$(t–2)$ constituents of $\mathcal{N}_{t-1}$, and so forth. Second, $\mathcal{N}_t$'s own delegate must advocate $\mathcal{N}_t$'s position in the more public context of some Tier-$(t+1)$ node $\mathcal{N}_{t+1}$, defend it against the delegates of other Tier-t nodes, and perhaps compromise until the node $\mathcal{N}_{t+1}$ reaches its own consensus. This process iterates all the way up the pyramid. In Parliament, there will be forums for public deliberation, and also the possibility of *in camera* discussions.

10 Group polarization. Self-assembled deliberative nodes are vulnerable to what Sunstein (2003) calls 'group polarization': ideologically similar individuals form an 'enclave' where they reinforce one another's beliefs, causing the whole enclave to evolve towards an ideologically extreme position. A preponderance of divergent, extremist enclaves can undermine the stability of the polity. Sunstein notes that this danger is greatest when the enclaves evolve in isolation from one another. However, he observes that enclaves also provide a space for marginalized political communities to articulate their views: "A special advantage of... 'enclave deliberation' is that it promotes the development of positions that would otherwise be invisible, silenced, or squelched by general debate. ...[m]any desirable social movements have been made possible through this route" (p.94). He concludes: "It is desirable to create spaces for enclave deliberation without insulating enclave members from those with opposing views, and without insulating those outside of the enclave from the views of those within it" (p.98).

Pyramidal democracy instantiates Sunstein's suggestion. Citizens can aggregate into ideologically homogeneous nodes ('enclaves'), where marginalized (perhaps extremist) ideologies can flourish. However, each node must send a delegate, who must deliberate and ultimately compromise with the representatives of those who hold opposing views.

11 Systemic discrimination. As observed by Sanders (1997), deliberative institutions may recapitulate or even exacerbate patterns of discrimination (either overt or subtle) which exist in society. Members of high-status groups (e.g. rich, educated white males) may dominate the discussion, while members of oppressed or marginalized groups (e.g. the poor, the uneducated, racial minorities, women) may

be excluded, ignored or dismissed. In some cases, members of low-status groups may voluntarily opt out of discussions, because they have been socialized from birth to be submissive and deferential (e.g. women in patriarchal societies) or because they feel both alienated and intimidated by the dominant group (e.g. racial minorities). Sanders (1997) reviews empirical evidence of such pernicious group dynamics in jury deliberations and interracial classrooms.[23] She is skeptical that subtle (often unconscious) prejudices will be neutralized even in an 'ideal' deliberative setting: "Some people might be ignored no matter how good their reasons are, no matter how skillfully they articulate them, and when this happens, democratic theory doesn't have an answer, because one cannot counter a pernicious group dynamic with a good reason." (Sanders, 1997, p.354). Mendelberg (2002) raises similar concerns.

In pyramidal democracy this argument has special force, because a member of a low-status group could be disenfranchised in two ways: she may receive less attention and respect during deliberations in her node, and she may be less likely to be chosen as delegate and promoted to higher tiers of the pyramid. However, PD also provides a natural solution to this problem, because the nodes of the pyramid are *self-assembled*. If a node member feels ignored or disregarded because of her race, gender, or socioeconomic status, she can, at any time, leave that node, and join another node which treats her with more respect —for example, a node comprised of other members of the same race, gender, or socioeconomic group (see §7).

Taken to extremes, this leads to the 'enclave deliberation' described in §10. The enclave provides a safe environment where low-status individuals can deliberate as equals. Delegates from Tier 1 'enclave' nodes can, if necessary, form an 'enclave' node at Tier 2, and so on. However, beyond some tier, the delegates from 'enclave' nodes will have to confront delegates from other parts of society. What then?

If the claims of 'pyramidal meritocracy' made in §3 are correct, then higher tiers in the pyramid will be populated mainly by highly intelligent and educated citizens. Racism, sexism, and other prejudices are cognitive errors, arising from factually incorrect beliefs, irrational thinking, and fear born of ignorance; presumably, more educated and intelligent people will be less susceptible to these cognitive errors (although they are not, of course, immune to them). Furthermore, high-level delegates from low-status 'enclave' nodes have been selected partly because they are the most assertive, articulate, and eloquent speakers in their group; they are therefore the least likely to feel deferential or intimidated when confronting members of high-status groups, and the most likely to win the respect of their audience. Conversely, high-level delegates from non-enclave nodes have been selected partly because they are the most thoughtful and respectful listeners in their group; they are therefore less likely to disregard the speech of another person, even one from a low-status group. In short: I presume that the quality of deliberation in higher tiers will be such that prejudice (either subtle or overt) is less likely to distort the conversation.

[23] See Strodtbeck and Mann (1956); Hastie et al. (1983); Hans and Vidmar (1986); Marsden (1987) and Cohen (1982).

Of course, in a profoundly bigoted society, prejudice will manifest even amongst the intellectual elite, and will poison deliberation even in the highest tiers of the pyramid. For example, in a deeply patriarchal culture, women will be dismissed and disenfranchised at every level of the pyramid. However, there is *no* democratic institution which can remedy such deeply rooted, widespread chauvinism. Furthermore, even in these settings, PD provides more equality of political opportunity than most other democratic models (including those currently in widespread use).

However, the meritocratic claims of §3 implicitly concede another of Sanders' objections: deliberative democracy discriminates against the inarticulate, and in particular, against the unintelligent and/or uneducated, who are unable to eloquently assert and defend their views. In the words of Cohen and Sabel (1997), deliberative democracy becomes 'logocracy'. To the extent that education is correlated with parental socioeconomic status (and in some societies, with gender), and to the extent that socioeconomic status, in turn, is correlated with race, these 'logocratic' tendencies may magnify the potential for systemic discrimination in deliberative institutions.

There is an obvious solution to the socioeconomic favouritism of logocracy: guarantee free and universal access to high-quality education, and ameliorate the socioeconomic factors (e.g. malnutrition, violence, discrimination) which impede some children's academic success. This itself is an important and worthwhile project for many reasons; it has nothing to do with deliberative democracy *per se*. A universally well-educated populace is necessary for the viability of *any* form of government that could broadly be called 'democratic'.

Of course, this project is still far from achieved, even in many wealthy industrialized countries. Nevertheless, let us assume that educational attainment has been mostly decoupled from race, gender and parental socioeconomic status. Effective participation in higher tiers of the pyramid will still require special communication skills and a knowledge of public policy which will be rare, even amongst otherwise highly educated people (e.g. many scientists and engineers). To remedy this, colleges and universities could offer intensive courses where newly elected delegates could upgrade their skills; the tuition for such courses would be paid for by the state.

Even with these provisions, logocracy (and in particular, pyramidal democracy) still disenfranchises the inarticulate, and hence the unintelligent and uneducated. This is somewhat problematic for the goal of *aggregative* democracy (see §6): one cannot make legitimate normative choices for society if certain voices are not heard (but see §5). However, such disenfranchisement is unobjectionable (indeed, probably desirable) for the goal of *epistemic* democracy. The people who are disenfranchised by a logocracy are presumably those least likely to contribute useful insights to a society seeking answers to positive questions.

12 Strategic behaviour. Like most voting mechanisms, PD is susceptible to manipulation by strategic voters. For example:

(a) A node might choose as delegate the member who is ideologically most likely to be promoted further up the pyramid (e.g. the member closest to the centre of the political spectrum), thereby maximizing the indirect influence of that node.

(b) Instead of joining the most ideologically similar node (where her marginal impact would be minimal), a strategic voter would join an ideologically divided node where she can hold the balance of power, or where she sees the opportunity to manipulate the outcome through carefully engineered voting cycles.

Regarding **(a)**, first note that a node gains nothing by sending a delegate who misrepresents its ideology. If an extremist node sends a moderate delegate, then it is *ipso facto* moderating its extremist position. It is actually good if nodes choose moderate delegates, rather than extremists, because then dialogue at higher tiers of the pyramid will be between moderates, who are more likely to discuss things intelligently and reach consensus. But couldn't an extremist node in Tier 1 or 2 send a 'stealth' extremist, who pretends moderation so as to ascend the pyramid, and then reveals her extremism once she attains political power in Tier 6? No, because as soon as she reveals her extremism, the Tier 5 node she represents will reject her as its delegate.

Regarding **(b)**, first note that one's ability to strategically insert oneself and manipulate a node is limited by the fact that nodes can refuse new members and expel existing members at any time. In a group of seven to ten people, it will quickly become clear if someone is manipulating Condorcet cycles, and she will be expelled. If (by accident or by design) someone occupies the political median in a node, and thereby holds the balance of power, then her moderate positions will prevail over those of either extremist faction; again, this is probably a good thing.

Here is another potential problem. Consider a cabal C trying to control a 7-tier pyramidal democracy. To control the Parliament, C must control at least half the Parliamentarians. To control a Parliamentarian i, C must control some proportion $\rho > 1/2$ of the constituents of i's node in Tier 6 (the supermajoritarian tendencies discussed in §7 suggest that $\rho \gg 1/2$ —e.g. $\rho \geq 2/3$). Thus, C need only control a fraction $\rho/2$ of all members of Tier 6. Each Tier 6 member is a delegate from a Tier 5 node, and to control these delegates, C must control proportion ρ of the members of the relevant Tier 5 node; thus C only needs to control proportion $\rho^2/2$ of all members of Tier 5. Likewise, C only needs proportion $\rho^3/2$ of Tier 4. Inductively, C only needs to comprise proportion $\rho^6/2$ of Tier 1. If $\rho \approx 2/3$, then $\rho^6/2 \approx 0.041$. Thus, a tightly organized cabal comprising only 4.1% of the electorate could control the Parliament.

While theoretically possible, this disturbing scenario is highly implausible. It requires a meticulously orchestrated, wide-ranging conspiracy, whereby cabal C

insinuates its members into carefully selected nodes across Tier 1. Even if some 'secret society' were able to insinuate its operatives in this way, they would probably soon be detected, because the members of each node discuss policy extensively, and presumably know each other's views fairly well. Node membership is entirely consensual, and most citizens would quit a node that was obviously in the grip of some cabal. The cabal members would soon find themselves isolated in nodes by themselves, at which point they could only control 4.1% of the Parliament.

Nevertheless, there may be other, more subtle ways that PD can be manipulated, and this issue must be studied carefully. It is probably not possible to anticipate all the strategic vulnerabilities of PD *a priori*; it will be necessary to analyze real-world implementations (see §14) in order to identify (and perhaps mitigate) strategic behaviours or other pathologies that arise in voting, delegation, and node formation.

13 Technology. Modern communications technology (e.g. the Internet) is not strictly necessary for PD, but it would vastly enhance its efficiency. Through email, blogs, and other 'virtual forums', nodes could deliberate across great distances; this helps nodes to organize according to ideological affinity, rather than geographical proximity. Such 'virtual deliberation' has two advantages over face-to-face deliberation:

- Geographically dispersed nodes are more likely to appreciate and promote the interests of the whole polity, rather than the parochial interests of one region.
- Written conversations are often more intelligent than spoken ones. A writer can articulate a complex, nuanced argument in its entirety, without being interrupted, whereas a speaker must struggle to control the floor and hold her listeners' attention. A writer has unlimited time to find the best words to explain her position; her readers can then carefully scrutinize and consider her arguments. In contrast, a speaker must extemporize, and her listeners must understand her and respond in real time. (These problems are especially acute in multilingual forums).

If long-distance deliberation has real political consequences (e.g. the selection of delegates or policy positions), then it must be conducted using secure protocols, to prevent malicious interference in discussions and during votes. These protocols must protect the anonymity of voters (if this is desired), ensure that only authorized voters can vote (and each can vote only once), and ensure that the outcome is tabulated correctly. Such 'secure, anonymous voting protocols' have already been implemented using cryptographic techniques (Schneier, 1996, §6.1, p.125), and can easily be adapted to PD.[24]

[24] See, e.g. `http://zelea.com/project/votorola` and `http://zelea.com/project/textbender`.

14 Implementation. Radical and utopian political schemes either founder upon the resistance of vested interests, or unleash dangerously unpredictable consequences. For this reason, most deliberative-democratic proposals are firmly embedded in the conventional political framework. PD is considerably more radical than many of these proposals, and it would be both reckless and politically impossible to implement it immediately in a large-scale polity. Instead, I propose to first test PD in small and informal democratic settings, such as student groups, private clubs, and professional associations. These 'micropolities' generally deal with rather trivial matters, and there are ample exit opportunities for dissatisfied members if PD spectacularly fails as a form of governance. (These polities also have high levels of voter apathy, but PD easily accommodates this: apathetic voters simply remain in the lower tiers of the pyramid.)

If PD succeeds in these micropolities, the next target would be the governance of publicly traded corporations. As observed by Berle and Means (1932 [1968]), the widely dispersed shareholders of a large public firm actually have very little real oversight or control, even though they exercise formal democratic discipline over the management. I propose to replace the existing shareholder democracy with a pyramidal democracy, where each shareholder receives a weight proportional to her share ownership. The Parliament of this pyramid would act as the Board of Directors; it would appoint the Officers of the firm, and would be consulted on major policy decisions.

For example, a firm having $7^5 = 16807$ shares in circulation could form a pyramid with five tiers, with each seven-member node at Tier k representing 7^{k-1} shares. A person owning one share would begin in Tier 1, but a person owning more than 7 shares would constitute a 'node' at Tier 1, and so could act as a delegate to Tier 2. Likewise, the owner of more than 49 shares would automatically ascend to Tier 3, and the owner of more than 343 shares would ascend to Tier 4. The owner of more than 2401 shares (i.e. more than one seventh of the entire firm) would automatically be in the Tier 5 Parliament (which would contain at most seven members).

Corporate governance provides a natural laboratory to tinker and experiment with PD, and limits the fallout from catastrophic failure: dissatisfied shareholders can simply disinvest from a badly governed firm. If PD succeeds in this setting, the next target would be municipal governments. Once PD has been tested and perfected in these small polities, it could be introduced into larger polities (e.g. regional or federal governments).

In this context, Leib (2004) has proposed that deliberative institutions be introduced as a fourth branch of government (the 'Popular Branch'), which would operate in addition to (not instead of) the existing Legislative, Executive, and Judicial Branches, with constitutionally delimited powers and prerogatives. In particular, laws passed by the Popular Branch would require ratification by the Legislative Branch (although the elected Legislators would fear an electoral backlash if they too frequently overruled Popular decisions). Furthermore, any law passed by the

Popular Branch could be overturned by the Judicial Branch if deemed unconstitutional.

Leib's proposal has two major advantages. It creates checks and balances which guard against 'mobocracy' or other possible excesses of the Popular Branch; this makes the proposal more acceptable to Burkean conservatives. It also provides a non-revolutionary, non-utopian way to introduce the Popular Branch, without dismantling or even changing the existing governance structures. This makes it more acceptable to existing elites.

Pyramidal democracy could be introduced as a 'Popular Branch' in exactly this way, with only minor differences from Leib's (2004) proposal. For example, Leib's deliberative juries cannot design their own laws; they can only approve or reject laws drafted by the Legislative Branch, or by a special multipartisan committee representing public initiatives. In contrast, the Parliament of a pyramidal democracy would be fully empowered to draft its own legislation (often originating in proposals percolating up from lower tiers).

Also, Leib's ratification requirement leaves the Popular Branch rather subordinate to the Legislative Branch. Instead, I propose that, during its first year of existence, decisions of the Popular Branch could be overruled by a 50% majority in the Legislative Branch. In each successive year, this threshold would rise by half a percentage point, until, after 33 years, it reaches 66.6%, at which point it would stop increasing. Likewise, during its first year of existence, the Popular Branch could overrule the Legislative Branch, but only with a 100% majority. In each successive year, this threshold would drop by one percentage point, until, after 33 years, it reaches 66.6%, at which point it stops decreasing. Thus, the Popular Branch would be initially subordinate to the Legislative Branch (for prudential reasons), but this inequality would be gradually erased, until the two institutions would have a symmetric relationship.

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