The Cure for the Ills of (e)Democracy is More (e)Democracy - Networked Governance in the Information Society

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Abstract: Information Society Technologies affect eVoting, eParticipation and eGovernance. Collective governance engages public, private and civil domains. Societal decision-making arrangements involve division of responsibilities among them and (layered) governance and implementation in each. Technology changes both 'optimal' and actual arrangements – not always in the same direction. The paper discusses these changes and ways to improve their alignment in terms of the issues arising, participation and the role of trust. Analytic phenomena include 'catastrophic' changes among multiple equilibria and coevolution of societal norms and network structures. Information Society Technologies have specific effects on performance of voting schemes and participation. Typically there are multiple equilibria – not all are efficient. Lower costs and greater information may affect high-turnout equilibria perversely (reducing turnouts). The availability of public information alters the impact of changes in risk or participation cost. The paper also considers implications for institutional reform and the evolution and dissemination of democratic governance.

1. Introduction

The influence of new technologies on political landscape goes far beyond electronic delivery of government services, electronic voting or electronically enhanced political discourse. The networking of society creates new forms of political consciousness, interest groups and identity, made more interesting and less tractable because proximity escapes geographic neighbourhoods. One consequence is the emergence of overlapping 'small worlds' specialised in different ways. While geographic co-location tends to bundle issues in groups and encourage their collective solution, issues arising in the electronic sphere may have more haphazard points of contact, solutions and even forms of governance.

Existing social contracts evolved over a long time; the ways principals (citizens) control agents (government officials) have changed only slightly. This evolution produced more-or-less-stable diversity, with brief interludes of rapid and profound adjustment. New global networks of communication and awareness are emerging at the same time as redesign of formal governance institutions – this two-way fluidity offers both tremendous opportunities and profound dangers. Continuity may be provided by the values of the developed world – democracy for public goods, accountability and equity, complemented by market-based competition for private goods and efficiency. But, as recent experience shows, neither their conceptual meaning nor their complementarity can be taken for granted.

It is thus necessary to consider how the unfolding Information Society throws up new issues and how emergent forms of public and private governance deal with them.

This work regards governance as a problem of societal agency and to consider the central role of trust as social capital. While the primary focus is on public-sector governance there is an equal need for transparent and accountable private sector governance

(especially in light of recent failures) and trust and coordination failures in the interplay of public and business governance can damage the allocation and performance of collective tasks between them.

2. Objectives

The substantive objective is to use evolutionary network analysis to develop new perspectives on eDemocracy and place trust at the heart of social capital in an electronically networked society by considering the following specific questions.

1. How do the issues to be decided in the Information Society differ from those for which our democratic institutions were devised?
2. How might the concept of 'participation' reflect the new environment?
3. Should we trust eDemocracy?

The methodological objective is to illustrate the relevance of these tools for analysis of societal institutions and indicate elements of a research programme that brings a range of tools (those used here and others from e.g. corporate governance and mechanism design) to bear on a deeper and more policy-focused analysis of the underlying issues.

The 'political' objectives are to engage the attention of: NGOs trying to engage with the Information Society on specific issues; governments interested in increasing the extent and effectiveness of participation to raise societal inclusion, effectiveness and responsiveness; and businesses seeking to improve commercial and ethical returns.

3. Methodology and framework

This research is part of a larger programme to develop and apply tools from game theory, analysis of societal networks, political science (esp. the positive theory of voting and the mechanism design approach to governance) and financial economics (agency (contracting), signalling (communication) and corporate governance) to expression of preference, allocation of responsibility or power and the interaction between the structure of claims and power in such extended organisations and their efficiency and innovativeness.

Societal decisions are made in overlapping spheres; with specific powers, competencies, objectives, organisation and norms. A simplified view distinguishes: public (Administration), private (Business) and societal (Civil, comprising customers, consumers, citizens, constituents, etc.). Each has different (but interacting) macro, meso and micro levels. Decisions are made and implemented via specific transactions (including information exchange) within and among them. Governance arrangements thus combine division of responsibility, the structure of connections and behaviour (Figure 1).

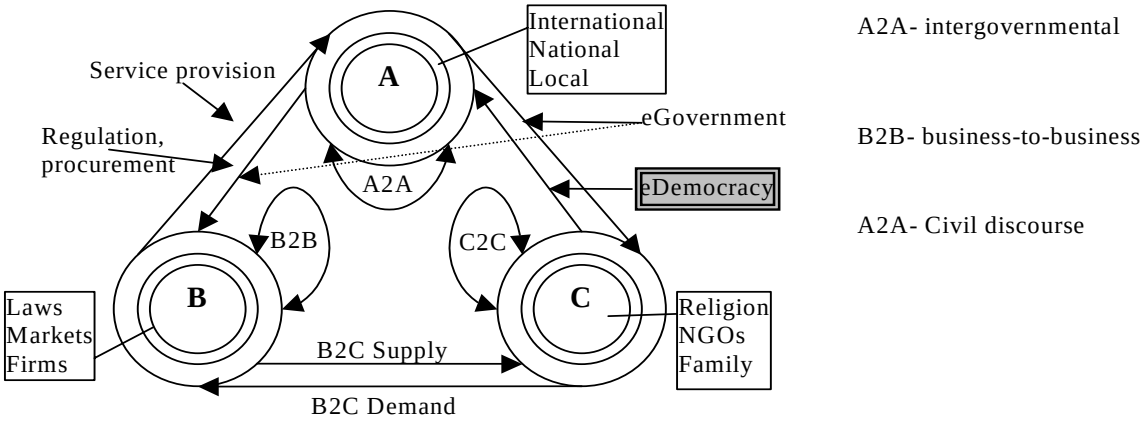

Figure 1: interlocking, networked governance

Each layer's governance structure is networked – the behaviour of the system and the influence of ISTs can usefully be understood through an appreciation of network effects.

Some are very simple (group membership or identity), while others involve more complex relationships[i]. The network perspective runs through the analysis: the identification of issues and the formation of constituencies around them depend on discourse; influence flows through overlapping networks of individual stakeholders, institutions and ideas. Participation is link formation – the process by which networks evolve – and its societal significance derives from behaviour of individuals in the context provided by their connections.

Participation (pursuit of individual or societal objectives through specific channels) is necessarily risky. Each of us has choices as to whether, how and with whom to engage – choices that are determined by trust. While space does not permit a full exposition of the relation between ISTs and political trust (see [4]), three observations should be borne in mind. First, trusting differs from trustworthiness: where a well-informed and active electorate delegates power to representatives for purely practical reasons – in other words, where "markets" for political services function perfectly – the two should gradually align. This rarely happens – as a result, governance institutions are a welter of checks, balances and unbalanced expectations that can lock us into a second-best world. Far from choosing whom to trust and using this power of choice to secure our interests, we trust because we must, seeking assurance through openness and accountability. But this form of "complete" societal contract is in some ways the antithesis of trust. Second, democratic participation involves trusting one's fellow voters – whom we cannot control and can scarcely observe – as well as those elected. What can we do if "the best lack all conviction, and the worst are full of passionate intensity?" The greater reach and informational flow of eDemocracy may make matters better – but only if we understand the potential and the great likelihood that they will make matters worse. Moreover, political governance increasingly involves partnership rather than delegation or control – its effectiveness depends on the actions and reactions of a whole range of unelected parties (voters and non-voters alike). Third, trust itself is a 'networked public good' both because it draws on relationships and because the very act of participation (or joining a network) involves trust. These issues are developed in more detail below.

The analysis of networks draws on roots in many disciplines. For present purposes, it suffices to indicate a few findings from each.

Table 1: Key features of approaches to network analysis

Discipline (network)	Feature(s)
Physical sciences (random)	Clustering (power-law distribution of links) [1] Small worlds (groups more likely to be linked to each other than to 'outsiders') [15]
Economics (complements)	'Tipping' (winner-takes-all) [11] Standardisation (lock in others by framing the issue) [6]
Game theory (strategic)	Stability of 'risk-dominant' conventions [10], [16] Tension between stability and efficiency [8], [5] Communication costs, structure influence behaviour [9]
Epistemology (semantic)	Clustering (powerful ideas draw others closer) [2] Mimetic evolution (variation, selection, heredity) [3]

Impact of ISTs on eDemocracy networks

ISTs affect all these approaches. The random networks approach applies to the concentric circles in figure 1, specifically link formation, which is directly altered by more information and the ability better to coordinate political action. In addition, political action typically cannot rely on formal contracts: 'weightless' virtual connections may be less trusted and the

'pull-though' effect of indirect connections may be attenuated. Local 'small worlds' communities may be ideal for local sharing and exploring new ideas, but relatively poor at their wider dissemination, as they offer fewer and/or longer paths between members of different clusters. On the other hand, 'hubs' (black circles) and 'links' (grey circles) may more naturally incline towards a longer-term perspective and involvement in representative government – they have more connections (hence influence) and more paths from their 'constituencies' to the rest of the world flow through them. Figure 2 shows some possibilities. The left hand component has a small world (with 2 links), a star (with a hub and a link) and a symmetric group (in the sense that all members have 3 links, though 2 have no outside links. The component on the left is an 'equitable-IST' symmetric network.

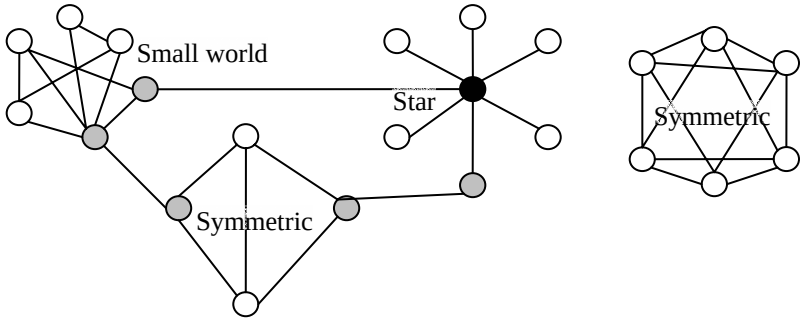

Figure 2: Network types

When most connections were community based, local and global politics were distinct and views could be relatively stable and diverse. If new technologies reduce the density of local connections, community affiliation is weakened and political dynamics become both less stable and more inclined to homogeneity. In other words, small worlds become either less prevalent or larger, and thus less effective[ii]. If technologies are uniformly available *and uniformly and symmetrically used* networks may become 'flatter.' The stability and diversity that characterise democratic systems may give way to a more chaotic combination of uniformity and 'tipping.' The use of such networks for direct rather than representative democracy can reduce the polity's ability effectively to deal with divisive issues. On the other hand, such networks may be more inclusive and offer new ideas greater scope to vie for support. This tension between open diversity and effectiveness is not new, but the speed with which new attachments are formed may increase while the credibility of informal commitment falls. Whether this is helpful depends on the issues addressed and the influence of networks on behaviour, which is dealt with by social science approaches.

The economic approach naturally applies to the division of responsibilities among the complementary domains in Figure 1. Ways of operating, specifically those involving exchange of information, offer substantial network externalities – the attractiveness of adoption increases with the number of other adopters. This has two implications for eDemocracy. First, adoption of eGovernance tools may be driven by compatibility rather than functionality, with the result that – initially at least – more efficient ways of performing 'old' tasks may dominate over 'new' tasks. Whether this is helpful depends on the embedded relationships among users. For instance, systems built around a buyer-seller relationship may not easily support more interactive engagement. Early deployments of eGovernment using business-developed ICT systems are less 'fault-tolerant,' less able to recognise signals of change and more bound to concepts of the citizen as customer than human systems[iii]. Similar considerations apply to eDemocracy – broadcast media embed one-to-many relationships, provide 'economies of scale' in influencing large numbers and are consequently vulnerable to unsound or ill-motivated communication, but for the most part have effective structures for checking, filtering or discounting tendentious content.

New, peer-to-peer forms of communication may have complementary strengths and weaknesses. They affect fewer people at once; thus information is easier to contest (though harder to 'correct'). However, they are probably more vulnerable to error and deception and may be more trusted if regarded as free from "spin"– as in the case of 'blogs.'

The game-theoretic approach has shed light on the evolution of behaviour within networks – especially conventions. eDemocracy can be viewed as a coordination game with multiple 'focal points'. In symmetric networks, a unique outcome will be stable – not necessarily the 'best' one even when all agree. For example, consider a game in which people choose whether to participate – the payoffs, which derive from pairwise cooperation with their network 'neighbours', are shown in Table 2. The crucial "democratic" assumptions are: participation is good ($P > N$); participation loves company ($P > \beta$); and that unilateral participation is costly ($N > \alpha$). These assumptions are consistent with either instrumental or expressive voting, but apply especially to political discourse.

Table 2: Payoffs in the eDemocracy game

	Ms. Y participates	Ms. Y does not participate
Mr. X participates	Mr. X gets P, Ms. Y gets P	Mr. X gets α, Ms. Y gets β
Mr. X does not participate	Mr. X gets β, Ms. Y gets α	Mr. X gets N, Ms. Y gets N

Either high or low participation is stable for any pair of people. If people randomly re-examine their behaviour and try to adjust to the actions of their neighbours, we can look for 'stable' outcomes that prevail in the long run. In symmetric networks, the unique stable outcome (see [4]) will be the *inefficient* low-participation 'norm' if $2 < \beta - \alpha$. On the other hand, clusters in asymmetric networks can settle on either norm and, by benchmarking themselves against those with whom they do not directly interact, may be able to switch to the superior norm fairly quickly. A second issue is whether the 'right' connections form. Some forms of political discourse are more productive than others. If communication is slow or uninformative, cohesion may dominate contagion and clusters may refine their positions to the point where the members can participate more effectively in political life – on the other hand, isolated clusters may be resistant to even mutually-beneficial change. Analysis of network formation shows that 'efficient' structures are unlikely to emerge unaided. ISTs can change information about potential links and reduce link formation costs. Depending on circumstances, this can dilute community deliberation or eliminate parochialism [7].

4. The issues of eDemocracy

These approaches can inform constitutional design and eGovernment policies on public information and participation. For business, they provide new perspectives on financial structure, markets for corporate control and comparison of financial systems. They can also aid analysis and design of new public-private partnerships.

As ISTs spread, the scope for policy, the reach of delegated authority and the identification of policy problems and political issues will be altered. As more information becomes available, governance and accountability increasingly rely on concrete, measurable benchmarks. This is increasingly challenging and central to the joined-up governance required by the Information Society. Public consultation relies on providing a complex range of accurate, valid and verifiable information in comprehensible form to elicit useful feedback, provide assurance that policy initiatives are proportionate and sound and facilitate cooperation of public, private and civil society entities. ISTs and the information flows they enable lead to new political identity and action groups and facilitate mobilisation of single-issue and -event coalitions – as a result, the balancing of issues

becomes more 'external'. These new forms of political action in an increasingly interconnected society have new spillovers, leading to the emergence of new issues and the reframing of old ones. In many countries, global issues with strong IST links (terrorism and migration) are increasingly supplanting local service delivery issues (e.g. health and education) on political agendas. This instability of political attention is fed by the new dynamics of activism. Ultimately, it affects the degree to which representative democracy continues to engage citizens' participation.

5. eParticipation

Voting is only one channel for participation and public governance only one channel for decision-making; ISTs make other channels available, changing the level and consequences of participation. One key issue is voter turnout: networked voting systems tend to have multiple equilibria. Figure 3 shows equilibrium turnout levels in a model[iv] where voting decisions reflect 'risk' (cost and exposure) and network effects (impact of other voters' behaviour). Decisions also reflect unobserved heterogeneity in 'expressive' preference for voting *per se*. When network (global) effects are large, voting is primarily *expressive* and decreases smoothly with costs and risk. When they are small, dynamics show jumps, path dependence and cycles. ISTs change risk and networking directly (e.g. lowering costs or raising risk) and by changing *other* voters' preferences and participation.

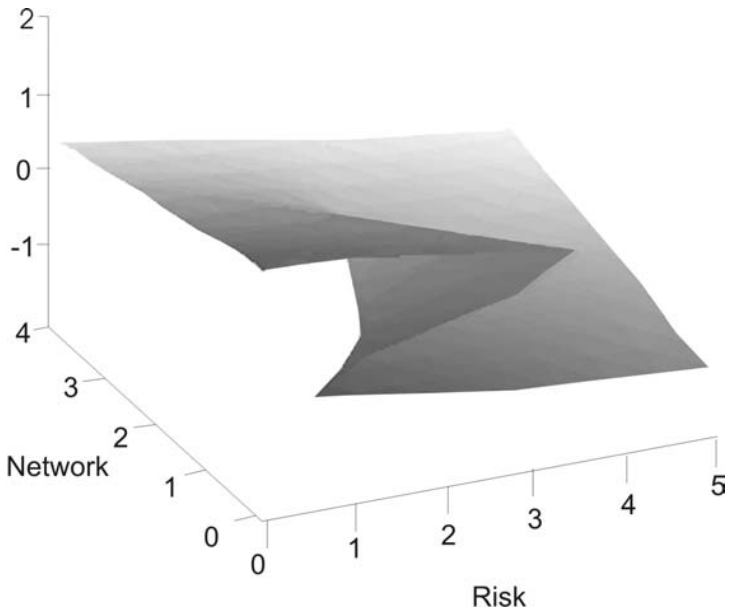

Figure 3: Multiple Voting equilibria

This model is based on an equilibrium perspective; the voting population consists of those whose unobserved preference for voting *per se* is high enough. This can be contrasted with a 'learning' model in which individuals base their decisions on public (e.g. media) information about others' behaviour – and where, as a consequence, the voting population is a representative sample of the population as a whole. At one level, the results are similar: roughly S-shaped paths for increases or decreases in participation, etc. However, the *response* of participation to e.g. falling risk (or voting cost) is different: in the absence of network effects, participation falls in the equilibrium model but is constant in the learning model; where network effects are strong, the learning model predicts rising participation while in the equilibrium model, it rises initially, but then falls back.

The configuration of representative democracy has constituency and agency aspects. Because the Information Society comprises diffuse and overlapping 'neighbourhoods,' public trust in governance and representatives' obligations to 'their' constituents may be

weakened. At the same time, increasingly well-informed constituents should become a valuable resource to those charged with policy decisions – but it is not obvious that the immediate effects of ISTs (e.g. enhanced information storage and dissemination) will help realise this potential. Policy decisions can be brought closer to the populace through expanded direct democracy – but the resulting reallocation of risk away from representatives may not improve either the electoral process or the quality of policy making, due in part to the 'herd behaviour' (tipping into inefficient norms) discussed above. Another factor is the increasing complexity and accountability risk of policy decisions. One could imagine a world where voters use 'smart' avatars to process masses of information to inform strategic voting in complex referenda, but the risks of accident or mischief – and deeper uncertainties about whether artificial agents are more trustworthy than elected officials and whether governance by electronic proxy has the same legitimacy as representative democracy have not even been resolved in the (simpler) commercial sphere.

6. Trust in eDemocracy

At heart, governance and representative democracy rely on trust – due to decision-making costs and linkage across issues, the social contract between citizens and government is of necessity incomplete. eDemocracy provides enhanced infrastructure to monitor and enforce it. Trust raises both positive (does eDemocracy increase or decrease trust) and normative (does this promote efficient and equitable solutions to collective problems) issues. The reciprocal trust of people and their representatives also provides the links in governance networks. The impact of ISTs is both direct (improving the speed and 'bandwidth' of communications) and indirect (increasing the range of connections). In particular, if citizens can more closely scrutinise public policy formulation and implementation they may take more active roles. This may increase political risk aversion (and discourage bold initiatives) by reducing discretion. On the other hand, it may effectively transfer risks to citizens who can more easily be supposed to have approved any course of action about which they were fairly informed. The balance of effects depends on technology (availability of sufficient information in digestible form), the security of the process (e.g. the accuracy and integrity of the information) and the general trust between people and electronic systems.

7. Conclusions

This research shows that analysis of trust and political behaviour by means of game-theoretic network modelling can describe recent aspects of collective governance: shifting roles among public, private and civil society entities; falling participation; unpredictable or perverse electoral results; and apparent instability of political agendas – especially the interplay of local and global issues. The analysis sheds light on how ISTs change political dynamics and increase interactions (connection and awareness) and thus the performance of political governance. Additionally, by distinguishing strategic choice based on direct experience from learning behaviour based on common information, it points to a more sensitive analysis of the interplay of political institutions and mass (or other) media. Finally, it sheds light on relationships between people and their political representatives, and how mechanisms influence their ability efficiently to pursue collective objectives.

These preliminary results support active and specific government cooperation with and support for networking amongst citizens. They suggest new forms of voting and redesign of representative democracy at local, regional, national and international levels. They highlight emergent risks and ways to reduce the likelihood of catastrophic shifts and 'hysteresis' (inflexible and/or extreme responses) and strategies to preserve political diversity and to combine democratic satisfaction with socio-political sustainability. The

results also point the way to new forms of institutional engagement between firms and shareholders and between NGOs and the concerned groups whose interests they represent.

However, much remains to be done. The models need to render institutional details and consequences of new technologies more faithfully. It is also necessary to 'close the loop' – neither technology nor governance institutions are wholly exogenous; their performance affects the flow of new technologies and institutional forms. For instance, it could be directly applied to the role of eDemocracy in EU expansion and the consequences for constitutional allocation of competences, or to how social, political, economic and other forms of inclusion could be jointly pursued. Finally, there is a great need for empirical validation and extension of these models, both to resolve uncertainties and to increase understanding and uptake of the results.

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[i] Some network effects follow indirect links while others depend in subtle ways on finer details of who is linked to whom –all societal networks have rich structures with indirect, weak or absent connections.
[ii] This is part of the erosion of social capital noted in [12].
[iii] Strictly, it is also observed that government officials backed by powerful information systems are both less able and less willing to custom-fit procedures to individual cases.
[iv] For details, see Section A7 in [4].