

# Distributed Digital Democracy (DDD)

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**Abstract:** Modern democratic political institutions are based on a decision-making system that is both inefficient and corrupt, as it seems to enhance the proliferation and implementation of ideas that benefit only political leaders, upper-class individuals, and multi-national corporations. Fortunately, this system is also unnecessary given advances in information and communication technologies (ICT) and the emergence of Web 2.0 features that enhance collective intelligence on the Internet. Several theorists have proposed alternative models of governance that can broadly be categorized as “e-democracies”. These models have been met with incredulity and resistance from policymakers, despite impressive theoretical developments, practical demonstrations, and empirical testing of their ability to maximize the collective intelligence of our societies. Broadly speaking, most “e-democracy” models are built within a framework of three pillars: (1) distributed decision-making, (2) digitally-based social mediums, and (3) a new paradigm of collaborative democracy. Therefore, the dominant models proposed to replace our current democratic systems can be referred to as a *Distributed Digital Democracy* (DDD). Here I attempt to introduce the main concepts of DDD, and suggest a potential pathway for the further development and implementation of a new governance system.

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# 1. Do we need a new system?

All democratic political institutions characteristic of modern industrialized nation-states are not actually democracies. Throughout the Industrial era we can say that the 'signifier' of democracy has exceeded the success of the practical implementation of democracy (Dahlberg & Siapera, 2007). In theory, democracies should be governments "for the people, by the people". This can be achieved through a dynamic and open relationship between a responsible citizenry and a responsive government (Glenn et al., 2012). In practice, corruption, non-transparent decision-making processes, hierarchical power distribution, and corporate influence over government erode any semblance of these theoretical principles (Dahlberg & Siapera, 2007). Simply put, these processes do not allow for the proliferation and implementation of the best *ideas*.

In a world characterized by rapid and exponential technological change, our current governance institutions are failing to make the best decisions regarding human happiness, ecological stability, global cooperation, and socioeconomic growth. As a result, total debt is increasing, unemployment is increasing, income inequality is increasing, ecological instability is increasing, greenhouse gas emissions are increasing, and risks of terrorism are increasing (Glenn et al., 2012). However, short-term decisions that benefit only a minority of socioeconomically privileged individuals and groups are increasing. This is because the institutional structure of modern governments are established to only serve the best interests of wealthy political leaders, upper-class individuals, and the executives of multi-national corporations (Heylighen, 2014). These institutions are at best inefficient, and at worst completely inadequate, when it comes to dealing with the most pressing control and management issues produced by complex global dynamics (Glenn et al., 2012; San Miguel et al. 2012).

In a world that is both global and exponential (Diamandis & Kotler, 2011), we need a system that enhances the way we aggregate information, transforms information into practical useable knowledge, and benefits all humans and the planet (San Miguel et al., 2012). Social theorists have proposed that such a system would need to be flexible enough to be continually "re-thinking" itself (Dahlberg & Siapera, 2007), while enhancing information openness/transparency (Lathrop & Ruma, 2010), and public collaboration (Noveck, 2009).

## 2. E-Democracy

Throughout the 21<sup>st</sup> century, several models based on information and communication technologies (ICT) and Web 2.0 features have been proposed. These models are commonly referred to as "e-democracy" or "e-government" (Coe et al., 2001; Mahrer & Krimmer, 2005; Chadwick, 2009; Belák et al., 2009; Fountain

et al., 2011). Fundamentally, all e-democracy is an attempt to open up government, by improving public access to data, encouraging public participation in the decision-making process, fostering evidence-based decision-making, and decreasing hierarchies (Belák et al., 2009; Fountain, et al., 2011). Such a digital transition is often compared to the transition from *Encyclopedia Britannica* to *Wikipedia* (Novek, 2009; San Miguel et al., 2012).

However, policy-makers have generally been incredulous and resistant towards e-democracy models (Chadwick, 2009; Noveck, 2009). This is likely because most politicians have not realized the disruption ICT will have on all of our institutions (Last, 2014), and because few institutions welcome a fundamental restructuring of their function (Novek, 2009). However, there is precedence (and an evolutionary logic) for such a restructuring.

During the Industrial Revolution a new form of governance became necessary. A more educated populace demanded more accountability from their governing institutions, which they realized were only serving the best interests of an economic elite. This led directly to the French and American Revolutions respectively, and towards the establishment of what we consider modern governing structure.

Today we find ourselves in a similar situation to those who pushed for a new system organization during the Industrial Revolution. I believe the evolution of human governance institutions, as well as contemporary political, social, and technological theory, suggests very clearly that we need a new governing system altogether. The properties of this system should be *distributed*, *digital*, and *democratic*. Such a system would, in theory, produce a dynamic government that enhanced the proliferation and implementation of the best ideas for all humans and the planet.

### 3. Distributed Digital Democracy

We need a new governance system. I propose that these fundamental principles characterize this system:

- **Distributed** – decision-making is distributed throughout the entire system based on trust-networks, expertise, and personal history with proposed ideas and successfully implemented policy
- **Digital** – all activity is hosted and maintained in a virtual distributed social network that allows for equal participation and the establishment of social connections based on trust and past decision-making.
- **Democracy** – all policies (or ideas) are put through a rigorous process that maximizes on-going collective democratic activity, namely: A) input, B) processing, C) output, D) feedback

First, distributed intelligence allows us to best maximize the utility of new information acquired by the collective intelligence of our system. Distributed means decisions are “spread out” throughout the entire system (non-randomly of course, more on that below). Intelligence refers to the ability to process information that can be efficiently used to solve problems and exploit opportunities (Heylighen, 2013). Due to advances in information and communication technologies (ICT) and the emergence and evolution of the World Wide-Web (WWW), we now have the technologies to maximize our systems distributed intelligence. Essentially, this means that we can now design a system that efficiently draws on the collective wisdom of the people in order to continually maximize long-term problem solving and opportunity exploitation for everyone.

What does this mean? Well our current system produces far more useful information than ever before in human history. However this information is mostly not harnessed for better decision-making. In fact, factions within modern governance institutions actively attempt to spread misinformation and make decisions based on outdated or simply incorrect ideas and paradigms. We do not have an evidence-based scientific approach to governance, even though it is most important for government to fully embrace and embody the principles of the scientific revolution. However, if our governing system were non-randomly distributed, the best ideas would be allowed to flourish. For example, decisions about the environment would be made with the most up-to-date scientific knowledge about the environment. Decisions about social policy would be made with the most up-to-date scientific knowledge about society and culture. Decisions about the economy would be made with the most up-to-date scientific knowledge about economics, and so on. This would not only lead to better overall decision making that benefitted all humans and the planet, but it would also make far better use of academia and the knowledge produced from every area of scientific inquiry.

In a government organized around principles of distributed intelligence what matters most fundamentally are the *ideas shared*, not the people sharing them. In our current system we actually vote for politicians, who are individual people (just in case you were unaware!). But voting for individual people does not make any sense, as not everyone can be an expert on every single topic in the modern world. Moreover, the voting options we have are embarrassingly limited to a few candidates organized within a few ideological factions (depending on the democracy in question). The example I always use to demonstrate the problem with this organization is with the previous election in the United States of America. American citizens had two options in the 2012 election: Barack Obama (a liberal(ish) democrat) and Mitt Romney (a conservative republican). Now I may personally agree with 50 out of 100 theoretical ideas about policy proposed by Obama (and about 10 out of 100 ideas about policy that he actually implemented in practice). Whereas I may personally agree with 10 out of 100 ideas about policy that Romney proposed in theory (and if he were elected I probably would have agreed with nothing he implemented in practice). What a choice! Now besides giving you a strong impression of my own political leanings, what I am trying to demonstrate is

that our options, no matter where you are on the political spectrum, are unnecessarily caged within individuals and ideologies. We can free ourselves from these constraints by doing away with the people and parties altogether! This is not advocating for anarchy or less government, this is advocating for a scientific democracy and better government! For voting based on ideas rather than people! Then we could truly have governments for the people, by the people.

So instead of having elaborate and costly campaigns for individual politicians we should have simple and inexpensive voting based on the competition of ideas! This is inherently and deeply scientific in its approach. The competition of ideas is a scientific principle and a key (perhaps fundamental) revolution in natural inquiry that occurred beginning in the 16<sup>th</sup> century. The authority, prestige, or opinion of a particular socio-economic elite (e.g., Barack Obama or Mitt Romney) does not give that particular socio-economic elite's ideas any privilege or advantage over the ideas of another. The ideas battle on their own accord in a distributed fashion. No ideas should win that only won because of the person who happened to propose the idea. But now the question may arise in your mind: where do these ideas compete? What would become of our famous centralized political decision-making centers?

This distributed intelligence can be maximized in a digital medium because digital mediums offer the potential for a stigmergic "bottom-up" self-organization. "Stigmergy" is an important principle to understand so I will introduce it here. Stigmergy occurs when various organically interacting "agents" (or "people") are able to collaborate within a shared environment (Heylighen, 2007). The shared environment "remembers" or "stores" the data of these interactions, which generates greater and greater levels of collective intelligence the more the agents interact. No useful knowledge is forgotten and the agents are free to continue "leveling up" the functioning of the medium, whatever the medium's purpose. The best practical example of this type of collective intelligence maximization can be seen with *Wikipedia* (Rodriguez et al., 2007). *Wikipedia* is a shared medium that A) anyone can edit at anytime, B) can be accessed by anyone with an Internet connection, and C) has evolved (and is continuing to evolve) the necessary checks and balances to ensure that content editing is fair, and content quality is always improving. This type of organization requires no centralized planning. The creation and maintenance of *Wikipedia* is a distributed, self-organizing phenomenon (Heylighen, 2013). *Wikipedia's* product is the world's best (and ever-improving) encyclopedia; but a similar environment could be designed to produce the world's best (and ever-improving) government (at any and all scales of governance!).

However, simply mimicking *Wikipedia's* architecture is not what I am proposing for a Distributed Digital Democracy. I am simply introducing the fact that *Wikipedia* is the best example to date of human collective intelligence online. Various other stigmergic mediums exist and utilize different mechanisms to maximize collective intelligence of various communities. The voting systems that have developed in *Digg* and *Reddit* for example allow the best content and comments to organically rise to the top of content pages and discussion panels (Johnson, 2010).

Furthermore, we can design this digital medium to also be a social network built on “trust” (Rodriguez et al., 2007). In many digital mediums, social networking is based on “friends” that you know in physical reality (e.g., Facebook), “followers” that share similar interests/goals (e.g., Twitter), or connections that share content and information that you enjoy (e.g., Tumblr/Pinterest, etc.). A digital medium for governance should be built on the trust networks. How many good ideas has this individual proposed? How many of these ideas have been successfully implemented in policy proposals that have maximized happiness? The economy? The environment? And so on...

Political theorists and collective intelligence experts have already explored a number of potential mechanisms to implement within a social “governance wiki” (e.g., Rodriguez, 2007; Noveck, 2009; Klein, 2012). Collectively these mechanisms are referred to as “deliberation technologies” (Klein, 2012). Small-scale implementation of deliberation technologies in decision-making experiments (e.g., Klein, 2007) and practical implementation of distributed intelligence principles for decision-making in the U.S. Patent Office have already been successful (Noveck, 2009). These preliminary tests have shown us that digital mediums can foster more efficient and effective decision-making. The question now becomes: can these digital mediums be scaled-up to a larger level of organization (i.e., national, international decision-making)? Although many people will undoubtedly be skeptical, the success of so many large-scale stigmergic mediums dedicated to other functions online, suggest that large-scale implementation of a governance wiki would be successful in the long-term. But another important question remains: how can we take that next step with our distributed intelligence principles and our digital medium, and ensure that the principles of the *democratic* process are maximized?

Remember, we can define democracy broadly as the successful establishment of a dynamic and open relationship between a responsible citizenry and a responsive government. That process must be respected and maximized in the Distributed Digital *Democracy*. How can we achieve this? Well first we need to understand, at a deeper level, the nature of the policy-making process, so that we can understand how the public will vote on ideas (as opposed to people). Here I have developed a policy-decision making process that in theory could be used to maximize distributed intelligence within a digital medium *and* maximize the democratic process. This builds off of, and is complementary to, the work of previous theorists working on designing a distributed digital governance systems (e.g., Rodriguez et al., 2007; Heylighen, 2013), and is fundamentally rooted in distributed/collective intelligence principles. The entire process from problem to solution should follow this pattern: input (i.e., gathering of data about phenomena potentially relevant to the system), processing (i.e., aggregating, filtering, and recombining the input information to best meet challenges), output (i.e., sending out preliminary solutions to entire populace), feedback (distributed voting by entire populace on the proposed solutions). If the by the time we get to the feedback stage there is still disagreement, then the process

should repeat starting at the “processing” stage until a democratic solution is agreed upon (Fig. 1).

Fig. 1 - Functioning of the social wiki

Distributed Digital Democracy	
Input	Stigmergic social space where anyone could propose policy in different sub-communities
Processing	Policy is discussed, debated, revised within sub-communities of experts that have accumulated “trust” based on the social rules of the “governance wiki”
Output	Policy is distributed to all citizens via email/app, along with all information relevant to the policy decision-making process
Feedback	Votes are tabulated and classified as approved, disapproved, or needs revision. If classified as approved the policy is implemented; if classified as disapproved or needs revision, the process returns to the “input” and “processing” stages

As should be clear from the above figure, the “output” and “feedback” stages are the most important aspects of the democratic process. It should also be clear that these stages of the democratic process are far superior to our current democratic process (the flaws/limitations of which I described in the previous section). In this process you would periodically be sent emails or notifications about a new policy proposal from the governance wiki. You would receive all of the information about the proposed policy, including who proposed the policy, what material they used to research the policy proposal, and the other members of the governance wiki that are supporting the policy proposal. You will then have the option to classify the proposal as “approved”, “disapproved” or “needs revision”. You may also have the option to add comments and suggest a direction for the revision process, if necessary. This would create a deep and incorruptible bond between citizenry and government.

You may now be saying to yourself one of two things (both of which I will address): First, who gets paid in this system? Second, what if I don’t want to be notified of every policy-decision made by my municipality and/or province/state, country, etc.?

First thing is first: money. In the current system taxpayers money is used to pay our politicians. However, in this system, the function of the politician is modified substantially. Instead of career politicians you have the organic emergence of experts who contribute to the governance wiki. As a result, taxpayers money is directed at those who policy-makers that have proposed the best policies. Success in the governance wiki simply replaces success within industrial governments.

Second thing is second: policy voting. In the current system we vote every “x” number of years for the political leaders we want to represent us in our representative democracy. However, voter turnout has never been 100% in any democratic nation (unless the citizenry are forced to vote, in which case it can be close to 100%). In fact, in many cases voter turnout is below 50%! In a Distributed Digital Democracy everyone will have access to the website and app. If you set up a profile your default settings will be ensure that you receive notifications for every policy proposal. However, you will have 100% control over your profile and you will be able to personalize your profile to whatever specifications are suitable to you. Do you only want to be notified when a social policy decision is being passed? You can set your profile up in that way and “unmark” notifications for “economic policy” and “environmental policy” etc. Do you want to only receive notifications about policy related to specific social issues, like “LGBT rights”? You can do that as well! Essentially, your degree of involvement with voting is completely in your control. Although there are no experiments of this in action, in theory, we should expect this to increase voter turnout. This is because your votes actually matter in a Distributed Digital Democracy and therefore you can actually help direct the welfare of your socio-political collective.

In theory, I don't see any reason why the implementation of a Distributed Digital Democracy could not be established for any level of governance (e.g., local, regional, national, international, global). The system would be internally self-regulating and become more intelligent the more people used and engaged with the software architecture. Furthermore, and more importantly, this would be a politics based on data and collective expertise, as opposed to a politics based on economic power and socioeconomic privilege.

## **4. Implementation**

The idea of an “e-democracy” is not new (Dahlberg & Siapera, 2007). Academics and web-enthusiasts have long-noticed that the Internet offers humans a space to create a new “social contract” free of the hierarchy and power that has corrupted previous political institutions. Furthermore, the implementation of various e-democracy proposals (i.e., going from theory to practice) has been unsuccessful (Mahrer & Krimmer, 2005; Chadwick, 2009). Unsurprisingly, politicians themselves usually



present us with the largest obstacle to starting a transition towards an e-democracy (Mahrer & Krimmer, 2005).

At the same time we find ourselves in a world where the human system is becoming unsustainable and too complex to control (Helbing, 2012). We also find ourselves in a system where hyper-specialist knowledge goes underutilized in politics, particularly when it comes to economic, social, and environmental policy. Essentially, we cannot be comfortable with the status quo, as the current organization is unjust and potentially destructive on a global level. We cannot have a system where decision-making is concentrated in the hands of a few people who are either co-opted by external financial interests and/or do not have the theoretical and practical expertise to deal with every single complicated decision that must be made within our society. To maximize our system's ability to deal with increased change and complexity, we must maximize our reliance on the expertise and knowledge that we already have in our system. We must attempt to install a Distributed Digital Democracy that places emphasis on ideas, and not individuals.

Admittedly, the first steps towards a Distributed Digital Democracy will be difficult, as entrenched financial interests will undoubtedly prevent progress. Therefore, we must build a strong plan of action towards practical implementation. First, we must build a strong and complete theory of governance that relies on the principles of distributed intelligence, digital mediums, and radical democracy. As this paper attempts to lay a type of "ground floor" for further discussion, comments are welcome and encouraged. Second, we must rigorously quantify this theory so that we can utilize it in computer simulations to see how the human system's decision-making effectiveness could be improved upon. Third, we must then take our theory and simulations and design a social wiki that can be used for testing in real-world situations with real people. As this process progresses we can continue to make improvements to the system architecture. By first starting at a local and small-scale we can get most of the major problems with the theory and/or algorithms out of the governance wiki before progressing towards experiments on larger-scales. Once at this stage, the success of the system should have been rigorously demonstrated, which means we may be able to push for its implementation within actual political entities (perhaps municipalities first, and then larger-scales of governance as its effectiveness becomes obvious). Long-term there is no reason why such a social governance wiki could be implemented for collective global-decision making, which is becoming increasingly necessary in the 21<sup>st</sup> century.

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