Unpicking the design space of e-Voting for Participation

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Abstract: The use of technology either for providing additional voting channels or facilitating conventional election settings has been proposed to increase dwindling participation in national elections. Whether technology can provoke participation is still questionable, with current e-voting systems allowing easy access to the voting mechanisms but failing to motivate participation effectively. The inevitable shift from conventional voting methods to digital ones gives us the opportunity to re-envision voting as a social tool that better serves democracy. In this paper we re-envision the design space of electronic voting by critically unpicking the potential of digital technologies to support voting.

Keywords: e-voting, participation, decision making

The use of digital voting systems is being championed as a means to tackle dwindling participation in national elections by facilitating voting and providing multiple voting channels. However, recent research suggests that merely increasing the number of possible voting channels does not necessarily increase participation in voting processes (Electoral Commission UK, 2007). This suggests that there is more to the problem of participation than access to the voting apparatus. Indeed, studies (Funk, 2008) show that remote voting could have negative effects on participation due to the lost ritual and the lost social pressure to vote. The potential of social technologies in this regard is significant. A recent study found that banner messages on a social network about friends who had voted in government elections drove more than 340,000 people to vote (Bond et al., 2012). Moreover, studies have indicated that social stimuli can positively affect the quality of decisions made (Tindale & Kameda, 2000). In this sense, the design of e-voting system must move beyond concerns simply for the security and trustworthiness of a system, to understanding voting as a fundamentally social process. In this paper we take a fresh perspective on e-voting: as a space for designing engaging shared experiences that enable users to make collective decisions. Taking conventional formal instantiations of e-voting, such as government elections, as a starting point, we revisit the design space of e-voting.
1. Designing E-Voting

The attributes of voting systems observed in elections center upon principal considerations of fairness, eligibility, verifiability, accessibility, privacy and coercion-resistance (Gritzalis, 2002). Table 1 illustrates a taxonomy of the key attributes of a typical election, organized according to which aspect of a poll they impact upon. These attributes are largely drawn from security requirements rather than a desire for participation. In this light, there appears to be much to learn from a number of voting instances in everyday life that have developed their own voting conventions. For example, where formal voting mechanisms are typically designed to prevent multiple votes, reality television viewers can often vote many times by text message, restricted only by their own financial limitations. In such contexts, participation is not achieved by the significance of the poll or fairness but due to characteristics of the voting process, such as the social interactions and the observable outcome triggered by the poll’s result. Such voting instantiations provide critical perspectives on the constraints of formal voting systems. In this paper, we explore the potential to subvert the aforementioned attributes of formal polls—eligibility, fairness, secrecy and the method of expression given to voters— with participation and engagement in the center of the discussion.

Table 1: Design attributes of a typical formal poll

<table>
<thead>
<tr>
<th>Categories</th>
<th>Design attributes</th>
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<tbody>
<tr>
<td>Eligibility</td>
<td>Universal Suffrage</td>
</tr>
<tr>
<td>Fairness</td>
<td>Vote Weighting</td>
</tr>
<tr>
<td>Accessibility</td>
<td></td>
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<tr>
<td>Verifiability</td>
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</tr>
<tr>
<td>Secrecy</td>
<td>Secret Ballot</td>
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<tr>
<td></td>
<td>Coercion Resistance</td>
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<tr>
<td></td>
<td>Results Embargo</td>
</tr>
<tr>
<td>Expression</td>
<td>Advance nomination phase</td>
</tr>
<tr>
<td></td>
<td>Non-transferable votes</td>
</tr>
<tr>
<td></td>
<td>Non-revocable votes</td>
</tr>
<tr>
<td></td>
<td>Approval voting</td>
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1.1. Eligibility

In elections today the principle of universal suffrage is commonly applied, which allows all citizens of sufficient age to vote. Yet, in many countries, despite struggles for universal suffrage, many people are eligible to vote but simply do not. In contrast with modern societies, Athenian democracy required by law every eligible voter to vote and publicly announced the names of the citizens that did not do so to increase the social pressure for participation. With e-voting we have the opportunity to rethink the way the electoral roll is managed and published to provoke social pressure for participation. As we mentioned earlier, recent work on the affect of social media on voter turnout demonstrated a significant increase of participation just by placing banner messages on users’ profiles showing friends who had voted in government elections.
1.2. Fairness

Fairness refers to both the value of differing perspectives and the ability of individuals or groups to express those perspectives. In many Western political systems, fairness implies both a “one person, one vote” principle and universal accessibility of the voting system. However, there are many occasions when voters’ opinions are not given equal weight in a poll. The use of weighted votes is common where there exists a hierarchy of stakeholders with different levels of investment in a decision. Thus the fairness of a vote may be designed to reflect, reinforce or destabilize existing power structures which is the purpose of voting in the first place. It is prominent that e-voting systems to support decision making should be configurable to support a wide range of power structures or question those if necessary.

Recently, with the introduction of e-voting systems in national elections, fairness also involves verification that votes cast were indeed counted. The efficacy of voting, that is, the belief that voters will effect a change through their actions (Carroll, Rosson, & Zhou, 2005), is at least partially dependent on the ability of the individual to verify their vote. Historical and informal voting methods often achieve this through “social verifiability”, such as showing of hands. In this way the social verifiability of a vote is in contrast to concerns for secrecy and this interplay is widely underexplored in modern e-voting systems. Even though considerations of privacy of the vote and securing the integrity of the voting process are important, we believe that voting systems could be designed to provoke the social stimuli for participation that has been lost throughout the years of constitutional and voting evolution.

1.3. Secrecy

Secret ballots were introduced in 1856 in the USA. The secrecy of formal votes is important for coercion resistance: when voters sell their votes, no documents are provided to verify that the vote has been cast a certain way. In formal elections the proportion of the electorate that has voted is used as an indicator of the credibility of the associated democratic process. Yet, in less formal polls it might be important to know that particular individuals have voted to give the results credibility. Research is necessary to find the balance between social pressure, social verifiability and secrecy in order to explore the full capabilities of technology to support participation as well as privacy.

Secrecy in formal voting also relates to the publication of interim results prior to the end of a poll (i.e. results embargoes). Many Western democracies forbid the publication of exit polls until after voting has closed. Studies have demonstrated (Schmitt-Beck, 1996) that by publishing articles about the strength of big parties and opinion polls only before the elections, the mass media can stimulate a bandwagon effect (McAllister & Studlar, 1991) that leads voters to choose one of the ‘apparent’ winners. By allowing participants to review the results before they vote we can increase their perceived self-efficacy and ultimately reflect on voters participation (Alvarez, Hall, & Llewellyn, 2008; Carroll et al., 2005).

1.4. Expression

Expression refers to the way the user is permitted to express their preference. The methods of expression given to users in formal polls (as we can see in Table 1) are largely drawn from a small space of possibilities. In formal polls candidates are typically nominated in a phase several weeks before the opening of the poll. Voters are generally not allowed to spontaneously add nominations to the ballot slip, though they may choose to spoil the ballot or vote to reopen nominations. The vote itself cannot be transferred to others without extenuating circumstances. In practice
technology introduces possibilities for ballot sharing as an act of political strategy, interest in the issue to be decided or simply kindness.

Conventional voting systems employ approval voting where voters can only express a preference for a particular option. Actions such as spoiling ballots emerge due to the need for voters to express themselves in a manner the voting system does not allow. Digital technologies offer the potential to explore alternatives to approval voting, including disapproval voting and computationally complex systems. Indeed in ancient Greece one of the forms of voting used was disapproval voting. Finally, in many formal polls, each of the participants has the same number of votes to use (typically just one). As mentioned earlier the “one person, one vote” principle ensures that the voting process is fair, yet in different contexts vote weighting or the number of votes reflect power structures in an organization. Additionally, depending on context, a more flexible system could lead to a result that better reflects the engagement of the participants who voted. For example, users of Viewpoint (Taylor et al., 2012) suggested that allowing multiple votes per person was an effective way of capturing how strongly individuals felt about a community issue. There is also an assumption that votes cannot be transferred to other polls. If this were allowed, voters could be empowered to express their preferences within and across polls.

2. Discussion

Since its origins in Greek and Roman history, voting has formed the bedrock of functioning democratic societies. One of the first voting methods used in Athenian democracy was the showing of hands or later using colored rocks thrown into a large jar (Ober, 1996). These voting practices were developed and used in order to provoke the social settings for participation and deliberation and close the gap between politicians and citizens. Indeed, in ancient Athens lottery has been used as the method of selecting councils or senate that did not require special expertise. This way every citizen had the chance – and responsibility – to be involved as a ‘politician’ for the common good and a random selection of citizens to probe their views on important public issues in depth.

These days modern western democracies have evolved from this early form of direct and participatory democracy to indirect representative and ‘telegraphic’ constitutions. Inevitably, technology has been proposed as a means to improve the efficiency and reach of the voting process, and is changing the way we vote. However instead of taking advantage of this shift from conventional to digital voting to reform our democratic constitutions, research is only focused on either security considerations or making it easier for people to vote. It is probably a little known fact that the “revolutionary vote recorder” was one of the first inventions of Thomas Edison in 1869 as a replacement of conventional showing of hands and manual counting of votes in the US congress. Although the efficiency of this new invention that could make voting in congress a matter of seconds the congressional leaders rejected the vote recorder as “an enemy of minorities who attempt to gain advantage by changing votes and filibustering legislation” (Wilhelm, 2000). These days with the wide use of technology in politics and electronic voting systems in elections we respond as we reinvented the vote recorder and we are rushing to apply a bad fix on an already malfunctioning democratic system. In this paper we adopted a fresh perspective on e-voting by trying to open the discussion of how technology can provoke a democratic reform and bring modern democracies closer to their original form. Taking modern requirements of voting systems in elections as a starting point, we revisited the design space of e-voting for participation. Through the configuration of any poll on the design categories of eligibility, fairness, secrecy and the method of expression, we open up the design space of electronic voting.
References


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Vasilis Vlachokyriakos is a PhD candidate based in Culture Lab, Newcastle University, UK. His PhD project explores how technology and electronic voting systems could increase participation in a wide range of democratic practices from informal collective decision making instances to political elections.

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