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PRELIMINARY VOTING—PREVOTING

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Abstract

We introduce the notion of *preliminary voting*, or *pre-voting*, wherein a voter deposits—perhaps over the Internet—a *preliminary vote* or *prevote* with election authorities at some time before the close of elections. Prevotes are not official votes, and need not be kept private; indeed, election officials might, as a matter of announced policy, publish the list of received prevotes together with the names of the voters submitting such prevotes. With prevoting, a voter *must* visit a polling site to make any final adjustments to his prevote in private, and to actually *cast* her (perhaps modified) prevote.

1 Introduction

There are many different voting technologies and procedures in use today[4]. This variety seems to be increasing, due to technological change, a desire to better serve all voters, security considerations, and a need to support more complex elections.

In this note, we introduce another voting procedure, called *preliminary voting* or *pre-voting*, and consider its advantages and disadvantages. In sum, we consider pre-voting to be a promising direction for future voting system evolution. In particular, pre-voting seems to be one way to obtain some or most of the potential advantages of "voting over the Internet" without incurring the serious security problems of actually "voting over the Internet."

2 Prevoting Scenario

We give a scenario to illustrate how prevoting might work in a typical situation. We divide this scenario into three parts: *setup*—where the voter obtains initial information about the election and how to prevote, *prevoting*—where the voter

actually composes and submits her prevote, and *voting*—where the voter goes to the polling site to privately retrieve her prevote, possibly modify it, and cast it.

The scenario as given here is only meant to be illustrative of the prevoting framework; there are obviously many variations possible on this theme.

2.1 Setup

Suppose Alice is already registered to vote in Middlesex county in Massachusetts.

One month before the election, Alice receives in the mail a letter from the Middlesex election officials informing her of:

- the date of the election,
- the address of the precinct polling place (her town hall) where she should cast her vote, together with a map of how to get there,
- the issues, races, and candidates on the ballot,
- her *prevoting password*, should she wish to prevote, and
- the URL of a state-maintained web site where she may prevote.

The letter also contains a paper *prevoting ballot* and envelope, since Alice's county supports prevoting both over the Internet and with paper ballots. If Alice will be unable to vote at her polling place on Election Day, she may use the prevoting ballot as an absentee ballot.

If Alice does not wish to prevote, then she appears at the polling place on election day (or earlier, if the election officials permit "early voting") and votes "as usual," using whatever voting equipment is provided there.

2.2 Prevoting

Alice, well-known to be a bit of a geek, decides to "prevote" over the Internet. She could have also prevoted using the supplied paper ballot, but she would have had to mail that in at least two weeks before the election, and by the time she wanted to prevote, that deadline had passed.

Using her home computer, she logs in to the Massachusetts state prevoting web site `prevote.ma.us`, and logs in with her name, address, and the prevoting password from her letter.

The election is fairly long, but Alice works conscientiously to decide what her choices are for each issue and race. Part-way through, however, she is interrupted, so she logs off. Her prevoting session, only partially finished, is saved.

The next day, Alice finishes prevoting during her lunch break at work, using her office desktop. She clicks on the "submit prevote" button, and her prevote

is submitted. She is well ahead of the "cutoff" 24 hours prior to the start of Election Day, after which no more Internet prevotes may be submitted.

Her prevote, when submitted, is also immediately posted on the state prevoting web-site `www.prevote.ma.us`, together with her name and address. She could have kept her prevote from being posted on the web site by selecting the "Keep prevote private" button, but she's proud of her voting choices, and is happy to have others see how she prevotes.

She also prints out a one-page *prevote receipt* which gives all of her prevoting choices both in English and in two-dimensional machine-readable bar code.

With the election only three days away, no one talks about anything else, and Alice's posted prevoting choices cause some interesting discussion at work. Alice had prevoted in favor of mandatory dog muzzles, and Alice's dog-loving colleagues argue that this proposition is too extreme. Alice is convinced. Although she doesn't actually need to change her prevote, she does so (by logging in again to the state prevoting web site) to show her new position against mandatory dog muzzling.

Alice's boss Howard sees Alice's prevote in favor of raising taxes on gasoline, and tries to convince her to vote against this proposition. Howard has a long commute to work, and this proposition will be expensive for him if it passes. Alice listens respectfully to his arguments, but isn't really convinced. She says, "You make many good points, and I'll need to think about them. I may vote as you recommend on Election Day." Had she felt more awkward or intimidated by her boss, she might have changed her prevote, or perhaps kept her prevote private in the first place. But in any case, she still intends to vote in favor of higher gas taxes on Election Day.

The prevotes (public or private) are tallied daily by the state election officials, and the tallies are published. Some industries that are potentially affected by increase gas taxes see that Massachusetts may well pass the proposition in favor of higher gasoline taxes, and they run a strong ad campaign against such taxes.

2.3 Voting

On Election Day, Alice goes to her precinct to actually cast her vote. She identifies herself to the election official, and is shown to a voting booth.

She gets her prevote up on the screen by entering her prevoting password (each voter has a distinct prevoting password). She could instead have waved her prevote receipt barcode under the scanner next to the voting machine.

She reviews her choices one more time, and decides not to make any further changes. She thinks a bit about whether the proposed gas tax might be too high, but decides that the need for additional education funds is just too great, and leaves her prevote unchanged.

She then presses the "cast vote" button, and her (in this case, unmodified) prevote now becomes her official cast vote. The voting machine prints out a paper record of her vote, which she also checks over and approves. The paper record then drops into the ballot box.

Her whole voting process at the polling site takes under one minute. There are no lines at the poll site. Alice is happy that she was able, on the one hand, to leisurely compose her ballot in the relative quiet and comfort of her home and office environments, and on the other hand to be able to officially cast her vote at the town hall so quickly.

3 Discussion

We show how prevoting relates to issues and requirements facing voting systems. For a fuller treatment of voting system requirements, see [4].

3.1 Voter Privacy

A good voting system will enforce voter privacy, so that no one but the voter herself will know for sure how she voted. This important requirement prevents voters from being coerced or bribed.

As an aside, we note that absentee voting does not provide any good way to prevent a voter from selling her vote. This is a strong argument why one may wish to prohibit absentee or mail-in voting as a routine procedure, or as merely a matter of voter convenience. Of course, it may be appropriate or necessary to allow a voter to vote absentee when it is the only way possible for her to cast her vote. But even then, "early voting" seems generally a better approach to this problem.

With a prevoting system, Alice can change her mind as she casts her vote at the polling site. No one can know how Alice actually votes. Voter privacy is preserved. Alice can't "sell her vote" even if she should want to.

The posting of prevotes does not violate voter privacy, since Alice's prevote and her actual cast vote need not be the same, or even related. Alice might claim to be a Democrat, but actually be a "closet Republican." Her prevotes look very Democratic, but her actual votes could be otherwise.

3.2 Compatibility

The notion of prevoting is compatible in principle with almost any current voting system; the only requirement is that the voting system must be able (or modified to be able) to support a fast way of "pre-loading" a voter's choices from the database of submitted prevotes or from a bar-code scanner, for subsequent review, modification, and casting by the voter.

Prevoting is orthogonal and independent of such issues as voter-verified paper trails.

There is some small interaction between prevoting and early voting: if a voter prevotes and then decides to cast her vote early, the prevote must obviously have been received at the polling site by the time she goes to vote early. If not, the voter will have to compose and cast her vote "from scratch" at the polling site for her early vote.

A voter who submits a prevote is perhaps less likely to require a provisional ballot, since the prevoting process provides an additional opportunity to check that the voter is on the registration rolls and to inform her of where she should go on Election Day to cast her vote.

3.3 Long Lines and Efficiency

One of the common complaints during the 2004 US presidential election was that there were excessively long lines at many precincts [3]. Many voting districts had purchased new voting equipment, and had apparently bought (or were allocated) too few. Many voters waited long hours in lines; others, unable to wait so long, gave up and were effectively disenfranchised.

Prevoting helps greatly with this problem, since voting at the poll site becomes dramatically more efficient, especially when the ballot is long. A typical prevoting voter has already specified her choices before going to the polls; all she needs to do at the polling site is to confirm them, making in private any last minute changes she wishes.

3.4 Cost

Because of the efficiency of a prevoting system, voting districts may greatly reduce their budget for voting systems.

With today's electronic voting system, a typical voting machine may service 200-300 voters. A prevoting system may double or triple that. Equipment costs may be cut in half.

3.5 Auditing and Exit Polls

Prevoting also serves a very valuable role in auditing the correctness and integrity of the voting system. Although a tally of the prevotes does not need to equal a tally of the corresponding votes, one expects these results to be close. Major discrepancies may be cause for a manual recount of the paper audit trail of the cast votes.

3.6 Absentee, Mail-in, and Internet voting

Although many have proposed, and are even testing, voting over the Internet, there are significant, even fatal, problems with doing so. (Consider the recent very negative evaluation [2] of the SERVE project, which proposed Internet voting for overseas military personnel; this project was subsequently cancelled.)

Prevoting over the Internet may be as close as one can reasonably get to "Internet voting," while adhering to the requirements of a good voting system (most notably, voter privacy, reliability, and security).

If prevoting over the Internet is adopted, there will be those who propose that the final polling-site visit could be skipped, and that the electronic prevotes

should automatically become cast votes if the voter doesn't show up to officially review, modify, and cast their votes at the polling site.

We feel strongly that such a proposal should be rejected.

This proposal would turn prevoting into true remote Internet voting, which has a multitude of very real and very serious problems [5, 1].

One might argue a bit differently for paper prevotes, since they are so very close to paper absentee ballots. If a voter casts a paper prevote, shouldn't it become a proper cast absentee vote if the voter doesn't show up on Election Day?

One might see this as more reasonable, given our current policies on paper absentee ballots. But we do feel, as noted above, that absentee voting should be restricted for use only in cases of necessity, not just for voter convenience. (Washington and Oregon notwithstanding.)

3.7 Accessibility

A prevoting system may also be more supportive of voters with special requirements, since a large fraction of the interaction can take place at home or somewhere with necessary special prevoting support.

3.8 Barcoded prevotes

Part of the prevoting proposal made here is that prevotes should be printed out and given to the voters, and that such printed prevotes should be machine readable at the polling site. This allows the voter, using a scanner, to very quickly load the voting machine with her prevote.

3.9 Pre-printed prevote ballots

This idea of being able to quickly load the voting machine with a prevote has other interesting positive implications and ramifications.

One could imagine political parties and other organizations printing up and distributing "recommended prevotes" that voters may take into the polling site. These are somewhat like printed crib sheets used today, or the printed ballots of long ago, except that they are now machine readable and are not final ballots to be deposited, only prevotes.

Voter privacy is preserved, since the voter can change any of the recommendations on the prevote once she is in the voting both.

The only downside to such a practice is that there may be an increased number of voters whose prevotes do not get submitted before Election Day to the election authorities, which degrades the utility of the submitted prevotes as a check on the integrity of the voting system.

3.10 Openness and Democracy

The public character of submitted prevotes may also help our democratic institutions. It encourages debate, while preserving the essential requirement that each voter's actual vote should remain private.

4 Conclusions

The notion of *preliminary voting* or *prevoting*, as proposed here, while adhering to standard voting system requirements regarding voter privacy, seems promising to make voting more convenient, trustworthy, and cost-effective.

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