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Inside Risks
More Sight on Foresight

Reflecting on elections, natural disasters, and the future.

MY PREVIOUS COLUMN, "The Foresight Saga, Redux" (*Communications*, October 2012), began a discussion that is continued here regarding some lessons learned from the 2012 U.S. November elections. I also pick up on where I left off four years ago in my column "U.S. Election After-Math" (*Communications*, February 2009). In addition, I reflect on the collateral effects of Hurricane Sandy, along with the needs to anticipate and minimize the potential effects of other natural disasters more generally.

Election Integrity, Oversight, Accountability, and Auditing

State and federal roles in elections thus far have been rather inadequate, failing to provide any meaningful assurances that elections can be conducted without serious problems, especially where these roles have often become strongly politicized. It is clear that some sort of impartial oversight is necessary to ensure integrity throughout the entire election process—from beginning to end. At present, every step along the way is a potential weak link, with respect to accidental and intentional misuse as well as deceptive or otherwise biased practices that create voter confusion and inconvenience. It is also clear that much greater accountability is necessary, particularly in cases where rectification of egregious problems is difficult, or in some cases rendered essentially impossible, as a result of shortsighted legislation and regulations, inadequacies of proprietary systems, and the lack of foresight and planning for exceptional conditions such as clearly evident election irregularities and process disruptions.

However, these considerations were exacerbated by what happened in the northeastern United States in the week before the 2012 U.S. general election: Hurricane Sandy resulted in ensuing losses of power and Internet access, shut-downs of public transit and businesses, and losses of life and property. The federal, state, and local government responses were generally exceptional, although Election Day on the East Coast was severely complicated in many places as a result.

Various attempts were made to reduce the hardships that voters had experienced—by allowing for more early voting, extending polling place hours, accommodating voters whose polling places were without power or otherwise inaccessible, and actually issuing and counting many more provisional ballots. However, inherent weaknesses in the election process made some of the would-be fixes even more vulnerable to unfortunate disruptions and even willful misuse—such as last-minute changes in software, procedures, and even voting places. When a voter has neither electricity nor the ability to travel (no gas, no subways, or other transportation options), and when polling places with no power have to be

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relocated, voting in person can become exceedingly difficult and confused by misleading reports of voting site unavailability—sometimes intermixing both real and bogus location changes. Furthermore, proposed emergency alternatives of voting by Internet or email without adequate preparation and concern for the possible risks, or even trying to print a ballot from some last-minute supposedly correct location on the Web, are likely to be problematic in the absence of electrical power, supposedly trustworthy computers, the rush to provide those alternatives without any real assurances, and so on.

One of the main goals for the conduct of elections should be to provide sufficient assurance throughout the entire process such that every loser and every voter who voted for any of the losers can justifiably believe that the elections were fair and justly evaluated—that is, that there were no events, circumstances, or externalities, accountable or otherwise, that might have altered the results.

From the perspective of the past Inside Risks columns and our periodic discussions of factors relating to election integrity, one of the most interesting aspects in the 2012 November elections was that the results of the Presidential race were definitive enough that they did not depend on the outcomes in larger states such as Ohio and Florida. If those results had been very close, it is quite likely that we would have seen prolonged law suits from both parties leading to the Supreme Court—irrespective of the perceived initial outcome. In Florida, the outcome of the presidential election was apparently not known officially for a week. In Arizona, it took two weeks to resolve three Congressional races because of the huge number of provisional ballots, all of which were ultimately counted after challenges by the losing candidates. Almost three weeks after the election, votes in 37 states and the District of Columbia were still waiting to be counted.

Overall for the election for all offices and ballot measures, numerous issues arose during the campaigning and the voting process. Examples related to voter registration, voter disenfranchisement, voter authentication, restrictions on early voting, shortages of voting machines and trained election officials that resulted in huge lines in certain precincts, unsanctioned and unsupervised last-minute changes to proprietary election software, reported cases of vote flipping on touch screens in both directions, inconsistent party affiliations with unclear implications for straight-party voting, irregularities in issuing, validating, and counting provisional ballots, cases in which more votes were reported counted than ballots issued, disappearing ballots, inconsistencies in announcements of policies, deceptive practices, poorly defined policies for reviewing and definitively recounting close races, potentially riskful emergency attempts at alternatives (noted earlier), along with many other factors such as the perception of even less visibility, accountability, and oversight for other than top races. The Supreme Court ruling that corporations are people as well as relaxed procedures on contributions also skewed the election processes, and gives the appearance of elections being bought.

Most of these problems were predictable. For many years, Inside Risks columns have reported issues with voting machines (disabled, failing, or miscalibrated touch-screens, erratic and nonreproducible behaviors, serious shortages of alternatives in times of failures, lack of accountability and audit capabilities) and election processes (for example, inadequate allocation of operative voting machines and provisional ballots, lack of adequate procedures for election integrity, reports of insider misuse and in some cases demonstrable fraud by election officials), to name just a few. Several specific anomalies deserve mention here.

Some sort of impartial oversight is necessary to ensure integrity throughout the entire electoral process—from beginning to end.

▸ Andrew Appel noted some serious irregularities in New Jersey, where the Lieutenant Governor issued a well-publicized directive permitting storm-displaced voters to vote by email—despite the state's declared illegality of the announced directive as stated. Matt Blaze further warned that New Jersey's emergency email voting could be "an insecure, illegal nightmare" (see https://freedom-to-tinker.com/blog/appel/nj-lt-governor-invites-voters-to-submit-invalid-ballots/).

▸ Voting system software was upgraded with "experimental" patches just a few days before the election in 39 counties in Ohio, bypassing normal election night reporting, and purportedly "fixing" problems.

▸ Alex Halderman demonstrated how easily existing voter registration addresses and other voter personal information in Washington state and Maryland could be accessed and changed online, by anyone else—based only on the ability to provide some publicly available personal information on the would-be victim.

▸ In addition to reports of on-screen vote flipping, machines in Covington, VA, mistakenly listed the Obama-Biden ticket as Republican, leaving open the question of what would happen under straight-party voting.

▸ Reports by Thom Hartmann and Sam Sacks (Truthout, The Daily Take blog) discussed claims by the Anonymous group regarding attempts to rig the presidential election in three states. Irrespective of the validity of those claims, it is clear that such efforts could succeed with relatively little evidence based on the fragility and lack of accountability in the existing proprietary election systems.

▸ ORCA, the Republicans' high-tech program to dynamically monitor voting trends and identify potentially sympathetic voters, failed during the election.

If Internet-based and other remote computer or mobile-device enhanced voting is ever to take place in any widespread use, it deserves much greater scrutiny, accountability, and oversight—considering the risks of tampering, coercion, vote selling, and vote buying. For example, see Barbara Simons and Douglas W. Jones, "Internet Voting in the U.S.," *Communications*,

October 2012; See also Mark Halvorson and Barbara Simons, "Recount Roulette," Huffington Post (http://www.huffingtonpost.com/barbara-simons/voting-ballots-recount_b_2069192.html?utm_hp_ref=politics).

Above all, elections represent a collection of holistic problems that encompass not just technology but also everything else that is largely nontechnological—governments, policies, lobbyists, corruption, and political biases. For example, the U.S. Election Assistance Commission currently has no commissioners, and has been reduced to the efforts of a few staffers. Concerted efforts to disenfranchise voters seem to have succeeded in making voting much more difficult than it should be, and yet evidently resulted in some major efforts to counter them. The nontechnological aspects of achieving equal opportunity for voters seem to dominate the technological issues, which are themselves considerable.

In retrospect, unauditable proprietary paperless direct-recording voting machines (for example, with touch-screens or other non-keyboard inputs, but typically with no real assurance for system integrity or meaningful trustworthy audit trails) seem to be generally discredited by the security community, but nevertheless still used—irrespective of the risks. Similarly, proposals for casting ballots over the Internet all seem to ignore the risks of integrity compromises, denials of service, loss of privacy, and vote selling/buying. However, consensus seems to be emerging that the most sensible approach at the moment utilizes computer-scanned hand-marked paper ballots (even if obtained via the Internet, perhaps in the case of overseas voters). Such systems can achieve a measure of verifiability that is unattainable by the unauditable direct recording systems and by Internet voting—in part because they provide something tangible against which discrepancies and other irregularities can be evaluated. However, significant further research and development are needed, plus enforceable operational procedures directed at the realization that many of the risks in elections also lie far beyond the technology. Once again, the efforts to obtain pervasively fair elections are decidedly holistic.

More attention needs to be devoted in the future to proactive planning for adversities.

Emergency Preparedness and Oversight

The effects that Hurricane Sandy had on the election on the East Coast (and elsewhere because of airport closures) remind us of the importance of trying to expect the unexpected and acting according to standards of preventive care. For example, climate change is now scientifically a reality, and needs to be confronted realistically. In addition, past hurricanes, earthquakes, tornados, and so on always tend to remind us that we do not devote enough attention to emergency preparedness. On October 29, 2012, Hurricane Sandy devastated shore areas of New Jersey and New York, with ocean surges destroying houses, disrupting travel, causing long-lasting power outages affecting millions of people (in some cases without power for weeks). Some landline and mobile telecommunications were shut down—with reports of failures of undersea cables as well. Wired and wireless Internet infrastructures were also affected, including some entire data centers. Payphones were suddenly in great demand. Various deaths were reportedly caused by the hurricane. Many organizations without off-site backup systems or enough emergency generators and spare fuel were seriously hindered in their efforts to recover. Some parts of the New York subway system were completely shut down for many days by flooded tunnels and damaged wiring. The PATH Trans-Hudson line from Newark to the World Trade Center was inoperable for almost a month, and the line from Hoboken, NJ, even longer. Enough of the New York University Bellevue Hospital backup system was situated in a basement that flooded, necessitating evacuation of the hospital. Seventeen million gallons of water had to be pumped out from the basement of the hospital, although the pumps in the basement shorted out and were unable to feed the backup generators on the 13th floor!

Of course, only some of these problems were suggested by past experiences going back to the November 1965 New England blackout, but the effects of Sandy were in many ways unprecedented. However, the scale of the disruption probably exceeded the overall disruption during the ice storm of 1998 in Quebec and Ontario, when the power transmission lines froze heavily and many of them collapsed completely under the excessive weight—resulting in a month of powerlessness in a huge but somewhat less densely populated area.

Conclusion

In the context of environmental disasters and election integrity problems, the preceding analysis suggests that much more attention needs to be devoted in the future to proactive planning for adversities, rather than simply waiting for the next environmental catastrophe, or the next heatedly disputed local or national election. Much greater accountability, contingency planning, and objective oversight are needed—along with considerably greater nonpartisan even-handedness—to ensure that the effects of future environmental disasters can be less widespread and that future elections will be able to avoid problems that are likely to recur or unfold anew in the future. Thus, it seems that a common link between election integrity and environmental emergency preparedness lies in increased understanding of the risks and greater foresight in anticipating what can go wrong. C

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