

# UIC John Marshall Journal of Information Technology & Privacy Law

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Volume 23  
Issue 3 *Journal of Computer & Information Law*  
- Spring 2005

Article 6

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Spring 2005

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### Recommended Citation

Doug Chapin, *The Machinery of Democracy: Voting Technology in November 2004*, 23 J. Marshall J. Computer & Info. L. 553 (2005)

<https://repository.law.uic.edu/jitpl/vol23/iss3/6>

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# THE MACHINERY OF DEMOCRACY: VOTING TECHNOLOGY IN NOVEMBER 2004

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## I. INTRODUCTION

As Election Day 2004 approached – bringing with it the likelihood of another closely-contested Presidential vote – concerns began to emerge around the Nation regarding the readiness of the electoral system to handle the vote and avoid the uncertainty and controversy that followed the 2000 election. With that perspective, my colleagues and I at *electionline.org*<sup>1</sup> identified several issues that we thought were most likely to have significant impact on the success or failure of Election Day 2004.

One of the key issues we focused on was voting technology, and with good reason: the big (if not dominant) election reform story of 2004 was the emerging concern in many quarters of new voting machines, particularly direct recording electronic (“DRE”) machines, known more commonly as touch-screen machines. Mistrust of the technology – and suspicion of the partisan loyalties of DRE vendors – led many critics to demand a paper audit trail for such machines.

DREs were not the only sources of concern, however; many jurisdictions still planned to use punch card voting machines in 2004, while still others planned to use mechanical lever machines based on technology from the turn of the twentieth Century.

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1. *Electionline.org*, Home, <http://www.electionline.org>. *Electionline.org* is a non-partisan, non-advocacy clearinghouse of election reform information, news and analysis supported by a grant from The Pew Charitable Trusts and administered by the University of Richmond.

On Election Day 2004, *electionline.org* planned to seek the answers to the following questions:

- Would voters be able to trust the voting technology in their jurisdiction?
- Would election officials and poll workers have difficulty using such technology?
- Would the machines avoid breakdowns and other operating problems?
- Would voters have confidence that their vote would be counted?

## II. ELECTION PROBLEMS ON ELECTION DAY 2004: THE DOG THAT DIDN'T BARK

In contrast to the widespread fears of chaos and controversy in advance of November 2004, Election Day proceeded surprisingly smoothly. There were reported problems, to be sure, but by and large they were best characterized as “no big and lots of littles.” In the end, the margins of victory in most races during the 2004 election exceeded the margin of litigation, meaning the trouble that arose in many states would most likely not have changed the outcome.

The most striking aspect of Election Day was the huge turnout and the impact it had on polling places. Report after report noted long lines across the country – and by day’s end, both our observers and the media were reporting wait times of five or more hours in Ohio, Pennsylvania and elsewhere.

By the end of the day, it was abundantly clear that the story of Election Day 2004 would not be widespread voting problems but rather the re-election victory of President Bush in an election marked by overwhelming turnout. While there were scattered problems, they did not occur in areas with close margins; conversely, in places where the margins were close there were not significant problems. As a result, election problems became in 2004 what Sherlock Holmes once described as the “dog that did not bark.”<sup>2</sup>

## III. A HARDER LOOK IN THE AFTERMATH, ESPECIALLY AT VOTING TECHNOLOGY

In the immediate aftermath of Election Day, however, a closer look at experiences around the country revealed widespread problems that, while immaterial to the outcome of the election, nonetheless indicate that much remains to be done in the field of election administration – especially with regard to voting technology. For example:

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2. See Arthur Conan Doyle, *Silver Blaze* (1993) (Sherlock Holmes helps narrow the list of suspects in theft of race horse by noting the failure of the watchdog to bark, suggesting that the thief was known to the watchdog).

*California*

Tabulation for the ranked-choice voting in San Francisco was temporarily halted due to the system being unprepared for the high voter turnout. ES&S, the company who makes the software, submitted a programming change to the California Secretary of State to correct the problem.<sup>3</sup>

*Florida*

Miami-Dade County had to bring in more tabulators because the high amount of ballots was delaying the counting process.<sup>4</sup>

In Volusia County, 14,000 ballots had to be recounted after a memory card failed to record the votes of the optical-scan ballots.<sup>5</sup>

A glitch in a ballot tabulator in Broward County caused the machine to start counting backwards after 32,000 ballots.<sup>6</sup> This problem was seen in other counties as well.<sup>7</sup>

A computer glitch in Escambia County fed the wrong information to computers in the elections office, giving Escambia the highest voter turnout in the state for several hours before the problem was seen and corrected.<sup>8</sup>

*Georgia*

One polling place had a ballot mix-up that caused voters to cast ballots in the wrong State House race for nearly two hours.<sup>9</sup>

Voting machines were down for two hours in Twigg and Hancock Counties due to an encoder problem. Many voted on provisional ballots until the problem was fixed.<sup>10</sup>

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3. Suzanne Herel, *Election Aftermath: Turnout swamped 'ranked' software*, The San Francisco Chronicle B1 (Nov. 5, 2004).

4. Andres Viglucci, *State criticizes counting delays in Miami-Dade*, The Miami Herald (Nov. 4, 2004).

5. Local6.com, *Politics, Glitch forces recount of 13,000 ballots in Central Florida*, <http://www.local6.com/politics/3882252/detail.html> (last updated Nov. 2, 2004).

6. "Broward vote-counting blunder changes amendment result," *News4Jaz.com*, November 4, 2004.

7. David Damron, *Distrust fuels doubts on votes*, Orlando Sentinel B1 (Nov. 12, 2004).

8. Brady Dennis, *Escambia voters had a great turnout- but not that great*, The St. Petersburg Times 5B (Nov. 16, 2004).

9. Bill Osinski and Tasgola Karla Bruner, *Incorrect ballots in District 99 cause confusion*, The Atlanta Journal Constitution 4JJ (Nov. 3, 2004).

10. Matt Hamblen, *Sidebar: Voting snafus limited in scope, severity*, Computerworld 16 (Nov. 8, 2004).

Leading up to Election Day, only eleven of Gwinnett County's 148 precincts had the required ratio of voters to voting machines.<sup>11</sup>

### *Indiana*

Lines became backed up in Vanderburgh County because, according to County Clerk Marsha Abell, untrained poll workers caused dozens of voting machines to malfunction.<sup>12</sup>

Franklin County recounted ballots after "election equipment counted straight-party Democratic votes as Libertarian votes."<sup>13</sup>

### *Kansas*

An observer watching the vote counting came up with the idea of using a hair dryer to solve the problem of wet ballots jamming an electric scanner.<sup>14</sup>

### *Maryland*

Vote counting in Baltimore County did not conclude on Election Night due to data transmission problems, possibly caused by human error.<sup>15</sup>

### *Missouri*

Two ballot counting machines in Jefferson County broke Election Night, delaying the final tally until early Wednesday morning.<sup>16</sup>

### *Nebraska*

In Sarpy County, thousands of ballots were double-counted before the glitch was identified and corrected.<sup>17</sup>

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11. Brian Feagans, *Voting machines in short supply*, Atlanta Journal Constitution 1JJ (Oct. 30, 2004).

12. Phillip Elliott, *Voting machine troubles cause long lines*, Courier Press (Nov. 2, 2004).

13. *Glitch causes Franklin Co. recount*, Indianapolis Star (Nov. 11, 2004).

14. *Election judges fix voting machine with hair dryer*, The Star Tribune (Nov. 4, 2004).

15. Laura Barnhard and Lisa Goldberg, *Balto. Co. officials overcome trouble with machine tally*, Baltimore Sun 2B (Nov. 3, 2004).

16. Tim Rowdon, *Counting machines broke, slowed tally in Jefferson County*, St. Louis Post Dispatch C02 (Nov. 3, 2004).

17. Brian C. Mooney, *Voting errors tallied nationwide*, The Boston Globe A1 (Dec. 1, 2004).

*New Hampshire*

A State Senate recount in Hollis was put on hold while 253 ballots had to be retrieved from an optical scan voting machine because they had not been removed and counted after voting was finished.<sup>18</sup>

*New York*

Voting machine breakdowns and problems with voter rolls slowed voting in Dutchess County.<sup>19</sup>

*North Carolina*

Over 4,400 votes were lost on electronic voting machines in Carteret County. A "special election" for Carteret was scheduled for January 11.<sup>20</sup>

In Mecklenburg County, errors in the vote totals were discovered. One candidate's votes were over-counted, while the opponent's were under-counted. In addition, after the first count, more ballots were reported than there were early voters to cast them.<sup>21</sup>

In Craven County, two problems with electronic voting machines caused vote counting errors. When recounted, the correct total changed the outcome of the District five seat on the Craven County Board of Elections.<sup>22</sup>

*Ohio*

Franklin County recorded an extra 3,893 votes for President Bush due to an error on an electronic voting machine. Franklin County cast a total of about 600 votes.<sup>23</sup>

A Kenyon College student waited in line ten hours in order to vote on Election Day. At her precinct, there were only two voting machines for 1,300 voters. Each machine was designed to handle twenty voters per hour.<sup>24</sup>

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18. Kevin Landrigan, *Missing Senate ballots turn up safe*, The Nashua Telegraph (Nov. 14, 2004).

19. Dan Shapley and Michelle J. Lee, *Judges are asked to resolve disputes*, Poughkeepsie Journal 8A (Nov. 2004).

20. Sharif Durhams, *Pecilier Carteret campaign starts off*, The Charlotte Observer (Dec. 2, 2004).

21. Carrie Levine and Richard Rubin, *New errors surface in county's vote totals*, The Charlotte Observer (Nov. 6, 2004).

22. Sue Book, *Two errors lead to incorrect vote totals*, New Bern Sun Journal (Nov. 9, 2004).

23. John Schwartz, *Glitch found in Ohio counting*, The New York Times 12 (Nov. 6, 2004).

24. Newsnet5.com, *Politics, Despite long lines, Ohio voter turnout not record breaking*, <http://www.newsnet5.com/politics/3889129/detail.html> (Nov. 4, 2004).

In Mercer County, computer malfunctions delayed lines. Paper ballots were delivered to precincts where the machines were not working.<sup>25</sup>

In Hamilton County, problems with voting machines delayed the start of voting for nearly an hour in some areas. Voters were unable to slide their punch card ballots all the way into voting machines, because all six of the machines were damaged in transit.<sup>26</sup>

### *Tennessee*

Voters in Loudon County, were mistakenly locked out of certain school board races by a voting machine. Voters were allowed to vote by paper ballot when they asked to, but other voters locked out of the races were not allowed to vote again.<sup>27</sup>

### *Texas*

A Willacy County Clerk failed to buy the necessary memory packs for the voting machines and ended up reporting incorrect results to the state. The Clerk said she was trying to save the county money.<sup>28</sup>

In Bexar County, problems with nineteen machines delayed vote tabulation until the morning after the election. An ensuing investigation found five of the nineteen machines were malfunctioning. Problems on the other fourteen machines were caused by operator error.<sup>29</sup>

Several machines malfunctioned in Travis County after poll workers hit a button which shut down the voting machines. Voters used paper ballots until the machines were fixed.<sup>30</sup>

### *Utah*

Voting machines in Utah County failed to register votes for those who did straight party voting, meaning 33,000 votes were not counted in the unofficial results. The problem has since been corrected and the votes will be in the official vote tally.<sup>31</sup>

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25. *Errors plague voting process in Ohio, Pa.*, The Vindicator (Nov. 3, 2004).

26. Liz Foreman, *Machine problems delay voting in Cincinnati suburb*, WCPO 9 News (Nov. 2, 2004).

27. Ann Hinch, *At least dozen unable to cast ballot on two key issues*, The Knoxville News Sentinel B1 (Oct. 14, 2004).

28. *South Texas county clerk corrects turnout, presidential vote*, The Star-Telegram (Nov. 7, 2004).

29. Elizabeth Allen, *Few Bexar touch-screens prove to be touchy*, San Antonio Express News (Nov. 4, 2004).

30. Liz Austin, *Isolated voting problems reported across Texas*, The Star-Telegram (Nov. 2, 2004).

31. Mark Eddington, *Missed votes due to error in machine*, Salt Lake Tribune C1 (Nov. 16, 2004).

*Virginia*

Both Culpepper and Westmoreland counties reported voting machine crashes for thirty minutes to an hour, causing long lines. According to a vendor representative, the machines crashed because poll workers, flustered by high turnout, did not allow enough time between voters.<sup>32</sup>

In Richmond, early voters cast ballots in the wrong congressional race until a computer error was discovered. The machines listed candidates in the seventh congressional district, instead of the third. The problem was found and voters cast paper ballots.<sup>33</sup>

#### IV. THE IMPACT OF ELECTION DAY 2004 ON THE E-VOTING DEBATE: PAST IS PROLOGUE

These problems all contributed to the ongoing debate about voting technology in American elections. November's vote marked the most widespread use of electronic voting machines in American history. An estimated thirty million voters cast ballots on some form of direct-recording electronic ("DRE") voting systems, touch screens, turning scroll wheels or pressing buttons for their candidates.

While the reviews were mixed and data on machine performance is still being gathered nationwide, it is nonetheless clear that Election Day 2004 did nothing to change the minds of those who previously had been strongly supporting or opposing the use of paperless voting technology.

In fact, accusations of conspiracy and mischief bombarded email boxes and some Web sites, as did press releases from voting machine manufacturers proclaiming the resounding proof of the real-world success of their products on the largest of all stages – a Presidential vote.

It is too early to know how machines of any stripes performed versus other systems. Reports of under- and over-votes are trickling in, from a number of different sources. Supporters of DREs are touting their record of accuracy and reliability on November 2 with nearly as much zeal as those contending that they stole thousands of votes, switched ballot choices and cooked the books when tabulating results.

In the past several months, information has emerged that, while far from conclusive, at least gives some indication of where the debate might go in the coming years as more and more states adopt some form of electronic voting to address the needs of voters with disabilities or to replace older paper or lever-based voting systems.

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32. Fredericksburg.com, *News, New touch-screen voting machines present problem in Culpepper, Westmoreland*, <http://fredericksburg.com/News/FLS/-2004/112004/11022004/1102problemsforweb> (Nov. 2, 2004).

33. PilotOnline.com, *Article, Some Richmond voter in Scott-Sears race get wrong ballots*, <http://home.hamptonroads.com/stories/story.cfm?story=77532&ran=83942> (Nov. 2, 2004).



## A. FALLING UNDER VOTES, BUT NO RISING CONFIDENCE

*The Miami Herald*, however, reported in two separate stories that a random sampling of eighteen voting locations in South Florida found no evidence of problems with electronic voting machines<sup>34</sup> and found a “drastic reduction” in the formerly “scandalous rates of spoiled ballots.”<sup>35</sup> Uncounted votes for President in Miami-Dade, for example, dropped from 4.37 percent using the punch-card system in 2000 to just over 0.5 percent using touch-screen machines this year.

Georgia Secretary of State Cathy Cox, in a statement released two weeks after the election, trumpeted a similarly sharp decrease in uncounted ballots. The state averaged five percent or more uncountable votes for president in fifty-six counties using punch cards in 2000, Cox said. Using DREs in November, that number dropped to under-vote rates of less than 0.5 percent.<sup>36</sup>

There was similarly encouraging news in February 2005, when MIT’s Charles Stewart issued a report revealing that over one million “lost votes” were recaptured between 2000 and 2004 because of election reform efforts and particularly the introduction of newer voting technology in many areas.<sup>37</sup>

And yet despite these initial studies, there is still generally an absence of comprehensive comparative data from around the country to measure with some certainty the performance of voting machines. DREs have received special attention from many circles, mostly because of concerns over hacking, malicious code and ties between companies that produce the machines and political parties and candidates.

But a number of groups around the country have begun to take a closer look at what happened on November 2. Black Box Voting, a group that has been out front in opposing the current batch of electronic voting machines and tabulators, said it was seeking information from states for its “Help America Audit” campaign. Bev Harris said on her Web site that

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34. Alfonso Chardy and David Kidwell, *In South Florida precincts, only minor discrepancies found*, *The Miami Herald* (Nov. 27, 2004).

35. Andres Viglucci, *Touch screens reduced spoiled ballots*, *The Miami Herald* (Nov. 22, 2004).

36. Secretary Cox, *Secretary of the State NEWS, New Data Shows Voting Accuracy Soared in 2004 Presidential Contest in Georgia*, <http://www.sos.state.ga.us/pressrel/111804.htm> (Nov. 18, 2004) (press release).

37. Charles Stewart III, *CalTech / MIT Voting Technology Project, Residual Vote in the 2004 Election*, [http://vote.caltech.edu/media/documents/vtp\\_wp21v2.3.pdf](http://vote.caltech.edu/media/documents/vtp_wp21v2.3.pdf) (accessed Mar. 30, 2005). Stewart derives the one million vote figure using “residual votes” – calculated by comparing the total ballots cast in an election with the total votes cast in the highest race on the ballot. Residual votes declined by slightly more than one-third between 2000 and 2004 which, when combined with the reported turnout in 2004, yields the one million vote figure. *See id.* at n. 2.

she would seek evidence of voter fraud through “the most massive Freedom of Information action in history.”<sup>38</sup>

Other organizations that agree with some of Harris’ critiques of e-voting, however, have said the margin of victory was sufficient that machine problems would likely not have changed the outcome. Still, they said the vote raised a number of concerns. *VerifiedVoting.org*, a group founded by Stanford University Professor David Dill, tracked more than 23,000 complaints from voters concerning election technology on Election Day (and another 11,000 after).<sup>39</sup>

Nevada’s first-ever statewide election using voter-verified paper audit trails provided at least a preview of what elections will look like in California, Ohio and other states that will require similar rules in two years. While voters there were instructed to compare their votes on the screen to a paper record behind a plastic screen, a survey taken on Election Day found that sixty percent of voters would have preferred a take-home slip, resembling an ATM receipt. A more striking finding – less than a third of voters surveyed compared the entire paper ballots with the vote on the screen.<sup>40</sup>

#### B. THE BIG ISSUE – SYSTEM OVERLOAD

Lost in the post-election focus on technological problems, however, is one aspect that dominated Election Day 2004: quite simply, the appearance of an electoral system simply overwhelmed by the number of people who wanted to use it. Consequently, long lines, shortages and other turnout related problems were rampant on November 2.

One could make the argument that the crush of voter turnout was not unexpected due to the widely-reported intense voter interest in the Presidential election; however, this national “system overload” suggests that even with substantial foreknowledge of voter interest, election officials were unable to prepare their polling places to meet the demand.

These apparent problems, as much as technology-specific concerns, suggest that election reform is shifting from a political and/or technological to a public administration issue – meaning that resource management and allocation issues are likely to achieve prominence alongside technology and policy in the election reform conversation in 2005 and beyond.

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38. See generally, Black Box Voting, *Consumer Protection for Elections, Welcome*, <http://www.blackboxvoting.org> (accessed Jan. 1, 2005).

39. See generally, *VerifiedVoting.org, Index*, <http://www.verifiedvoting.org> (accessed Jan. 1, 2005).

40. Lombardo Consulting Group, LLC, *Voters Prefer Take-Home “ATMStyle” Receipt to Prove Their Vote was Counted Accurately*, <http://www.lombardoconsultinggroup.com/docs/nvotersurvey.pdf> (accessed Mar. 30, 2005).

