TECH21
Scientists question electronic voting

Monday, March 3, 2003
San Francisco Chronicle
CHRONICLE SECTIONS

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Oddly enough, Silicon Valley has been a laggard when it comes to applying the technology it's famous for to the election process. Now it's finally beginning to catch up, and it has suddenly become the locus of an overdue -- and profoundly important -- debate about the mechanics of democracy in the 21st century.

The crux of the discussion is whether Santa Clara County, the heart of the valley, should follow the lead of other jurisdictions that are moving to all- electronic voting or instead choose systems that combine the convenience of digital balloting with the auditability afforded by paper ballots.

The county supervisors last week came up with a compromise that left everyone involved a little confused but at least opened the door to future requirements for a tangible audit trail -- a major, if only partial, victory for critics of the all-electronic approach.

Santa Clara County is one of nine California counties still relying on punch-card voting machines, the technology that caused so much grief in Florida in the 2000 presidential election.

A year ago, a federal judge ordered that the state replace all such equipment by the 2004 presidential election.

So the county government began looking at alternatives, and its staff came up with a $20 million plan to buy touch-screen voting machines. Such terminals let users make their choices by tapping the screen next to the candidates and measures they support. The results are tallied automatically, so -- in theory - - an accurate count is available almost instantly when the polls close.

Alameda, Riverside and Plumas counties have already chosen that seemingly cutting-edge technology. Most other counties in the state are moving in the same direction, taking advantage of financing offered by Proposition 41, the $200 million Voting Modernization Bond Act California voters approved a year ago, and the $3.9 billion Help America Vote Act that Congress enacted in October.

But a funny thing happened on the way to the paperless future: Some of high technology's best and brightest -- computer scientists who know better than anyone else what computers can do but also how they can be misused -- came out against Santa Clara County's plan. They were joined by Kim Alexander, founder and president of the respected, nonpartisan

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Alexander, founder and president of the respected, nonpartisan California Voter Foundation, and other concerned citizens.

Their objection, as David Dill, professor of computer science at Stanford and leader of the campaign, puts it on his Web site: The machines the county planned to buy, like those other jurisdictions around the country are installing, "pose an unacceptable risk that errors or deliberate election- rigging will go undetected, since they do not provide a way for the voters to verify independently that the machine correctly records and counts the votes they have cast." (See the box on E3 for Dill's Web site and others sites discussed below.)

Dill, Alexander and their associates are not opposed to touch-screen voting.

After all, as proponents of the technology argue, it does offer many advantages over the alternatives, including the ability to display ballots in multiple languages, potentially easier access for people with disabilities, easy ways for voters to correct mistakes or change their minds, and the possibility of programmed safeguards against human errors that could disqualify a ballot (such as voting for multiple candidates in a single race).

Critics contend, though, that it's possible to preserve these advantages, yet reduce the risk of accidental or malicious miscounting by choosing touch- screen systems that also produce a "voter-verifiable audit trail" -- in plain English, a paper ballot. The voter could review it to ensure its accuracy, then deposit it in a ballot box. Later, the ballots could be used to spot- check the totals reported electronically. If disputes arose, they would even be available for manual recounting.

Technologically, there's no great challenge here -- adding printing is "hardly a moon shot," as Dill put it. Sacramento County is already testing machines that print out ballots, and Mendocino and Sonoma counties are insisting on this capability in their new equipment, according to Alexander. But a move in that direction by the county that's virtually synonymous with digital technology would undoubtedly give the idea a big boost.

In January, when Alexander and Dill got involved, Santa Clara County had already been working on its plan for months, and the county supervisors were on the verge of a final vote. By all accounts, the supervisors and county election officials initially responded to their arguments with skepticism, if not irritation.

It quickly became clear, though, that the opposition couldn't be dismissed as uninformed Luddites. Dill, who says he began working on the issue in the fall without even knowing about the county's plans, had already put a powerful presentation of his case on the Web in response to reports of problems with paperless voting equipment in Georgia.

In consultation with other experts and his Stanford colleagues, he had also written a petition urging that voting machines not be purchased or used unless they provide a voter-verifiable audit trail. When such machines are already in use, the petition stated, they should be replaced or modified to provide such a record. And Dill had collected the signatures of scores -- now hundreds -- of eminent technologists, including many of the best-known names in computer science, security and election technology.

Such formidable opposition caught the eye of Kevin Shelley, California's new secretary of state. Last month he appointed a task force to advise him and the board charged with certifying voting equipment in the state on security and auditability issues raised by touch-screen voting. Among the members of the task force, which held its initial meeting last week, are Dill and Alexander.

Santa Clara County supervisors first put off a vote, then last week came up with a split decision. They directed the county administration to proceed with plans to buy touch screens from Sequoia Voting Systems in Oakland, as the staff had recommended all along, and they didn't mandate the addition of printing equipment.

But by a 3-2 vote the supes also accepted an amendment laying the groundwork for ballot printing in the future. It directed the staff to ensure that the contract with Sequoia calls for the company to provide printing equipment at no extra charge if the state eventually requires it. And it called on the staff to develop a pilot program for printing user-verifiable ballots beginning with the November election.

Altogether, the decision was far from a ringing endorsement of the critics' arguments. But in Alexander's words "the very fact that the county stopped, listened and responded is a victory."

OLD ARGUMENT, NEW URGENCY

Dill was by no means the first scientist to challenge the move toward paperless voting. Among others, Peter Neumann, principal scientist at SRI International's Computer Science Laboratory and a leading expert on the risks associated with high technology, and Rebecca Mercuri, a software developer and Bryn Mawr professor who wrote her dissertation on electronic voting systems, have been arguing for years that there's no reliable way to guarantee the security and integrity of all-electronic counting systems.

I used to think their concerns were worth worrying about but not all that likely to materialize in the real world. Now I've changed my tune: I'm convinced that the dangers are real, not just hypothetical, and that it's critical that our voting systems be fortified against them.

One factor that changed my mind was the way the Florida situation finally played out. But numerous subsequent revelations have also influenced me:

-- Problems with Florida's new touch-screen equipment have been amply documented. To cite just two: Votes cast for the Democratic candidate for governor in one precinct during last fall’s gubernatorial race were credited to Jeb Bush because of a "misaligned" touch screen. No one knows how many votes were misrecorded. In city council elections in Palm Beach last March, when a losing candidate challenged the results, a local judge denied the challenger and his consultant, Mercuri, the opportunity to inspect the machines, citing the rights of the manufacturer, Sequoia, to protect its trade secrets.

-- Bev Harris, a Seattle publicist who has become a leading muckraker on voting-technology issues via her "Black Box Voting" Web site, uncovered some disturbing facts (since confirmed by other sources) about Sen. Chuck Hagel, R- Neb.: He was part owner and former chairman and chief executive of the company that made all the equipment that counted the votes during his last two runs for office, yet he failed to list his ties to the company on federal disclosure forms.

-- Jason Kitcat, a British developer who for three years led an open-source project to develop secure vote-counting software, recently abandoned the project. "The more I have coded, researched, discussed and read," he wrote on his Web site (www.free-project.org), "the more I’ve realised that . . . I’m much better off focusing on the dangers all such technologies present to processes such as voting."

-- Just last week Dan Spillane, an engineer formerly employed by VoteHere, a Bellevue, Wash., manufacturer of touch-screen machines, sued the company for wrongful termination, charging that he was fired for pointing out some 250 defects, including many that could interfere with the accuracy of reported results. He also charged that the company, which is run by a former senior military aide to Vice President Dick Cheney and whose board includes former CIA Director Robert Gates, misled auditors certifying its products.

In a declaration filed in support of Susan Marie Weber, a Riverside County resident who is challenging the legality of paperless voting, Neumann wrote that "The shining lure of these ’hype-tech’ voting schemes is only a technological fool’s gold that will create new problems far more intractable than those they claim to solve."

I’m convinced he’s right. The good news is that he, Dill, Alexander and others in the growing movement to challenge such systems are bringing the problems to light. Let’s hope that Santa Clara County’s decision last week, tentative as it was, turns out to be the beginning of a new realism about what high tech can and can’t do to preserve democracy.

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THE CASE AGAINST ALL-ELECTRONIC VOTING

Internationally renowned computer scientists as well as election experts and activists are taking to the Web to point up the dangers of voting equipment that doesn’t produce paper ballots for verifications.

-- Professor David Dill's Web site calls for voting machines that provide a "voter-verifiable audit trail." It includes an excellent "frequently asked questions" page: verify.stanford.edu/evote.html

-- The Voting Technology section of the California Voter Foundation, an excellent compendium of news, links and analysis by foundation President Kim Alexander: www.calvoter.org/votingtechnology.html

-- "Election Guardians," a site devoted mainly to the suit filed by Riverside County resident Susan Marie Weber challenging the legality of that county's all-electronic system: www.electionguardians.org

-- "Black Box Voting," a site run by publicist and author Bev Harris, including exposes of Sen. Chuck Hagel's previously undisclosed involvement with the company that made the machines that count all votes in his home state:

www.blackboxvoting.com

-- Excellent recent articles by Salon.com's Farhad Manjoo on touch-screen voting technology and problems recently revealed by Harris and others: www.
salon.com/tech/feature/2002/11/05/voting_machines/index.html and www.salon.
com/tech/feature/2003/02/20/voting_machines/index.html

-- "Electronic Voting" site of Rebecca Mercuri, a specialist on election technologies and a leading critic of all-electronic systems: mainline.brynmawr. edu/rmercuri/evote.html

-- Links to resolutions and documents debated by the Santa Clara County Board of Supervisors:
www.sccgov.org/agenda/view/0,5310,ccid%253D215948,00.
html -- scroll to item 30. Supervisor Peter McHugh's successful amendment supporting voter-verified paper audit trail is listed as "2/25/03 Supp Info 4."

-- Links to papers on election risks by Peter Neumann, principal scientist at SRI International's Computer Science Laboratory: www.csl.sri. com/users/neumann/neumann.html#5!

-- Report of the Caltech-MIT Voting Technology Project (July 2001), endorsing use of optical-scan equipment: www.vote.caltech.edu/Reports/index. html Source: Chronicle research

Page E - 1