

- Boston, 2008).
4. D. Brooks, *Bobos in Paradise: The New Upper Class and How They Got There* (Simon and Schuster, New York, 2000).
  5. T. Frank, *What's the Matter with Kansas? How Conservatives Won the Heart of America* (Metropolitan, New York, 2004).
  6. N. W. Polsby, A. Wildavsky, D. A. Hopkins, *Presidential Elections: Strategies and Structures of American Politics* (Rowman and Littlefield, Lanham, MD, ed. 12, 2008).

10.1126/science.1166194

## POLITICAL SCIENCE

# Can We Trust the Machines?

Walter R. Mebane Jr.

Since the 2000 U.S. presidential election, many have worked to increase voters' confidence that election results are fair and correct. One theme from 2000 was that the technology used to record votes—especially punchcard ballots—was deficient and needed to be replaced. The Help America Vote Act of 2002 provided federal funds for states to acquire electronic voting machines or optically scanned paper ballots. New controversy arose when computer scientists and others complained that the recommended technologies were far from being up to the task. The electronic technologies suffered from security weaknesses and production defects, and election officials often administered the new machines incompetently. Critics argued the machines lacked transparency, were unreliable, and were possibly subject to undetectable manipulation.

Michael Alvarez and Thad Hall belong to a group of political and computer scientists who after 2000 began the Caltech/MIT Voting Technology Project, intended to diagnose problems with current practices and to point the way to developing better ones. *Electronic Elections* summarizes insights they have gleaned from their extensive experience. The book is meant to instigate scientifically informed election administration. The authors argue for a comparative approach to risk management that considers the costs and benefits of alternative methods. Rather than consider how electronic voting technology performs in isolation, we should judge how it works in comparison to paper systems. The authors reject the position that voting reform is a high-

risk activity to which we should apply the precautionary principle.

The authors' stance is evident when they argue that the idea of voting over the Internet has been unwarrantedly dismissed in the United States. They are particularly exercised about the U.S. Department of Defense's Secure Electronic Registration and Voting Experiment (SERVE), which was intended to determine whether using the Internet could facilitate voting by uniformed and overseas citizens. SERVE was canceled before being implemented in 2004, due to concerns by some experts that secure Internet voting was impossible. Alvarez and Hall point out that European countries were conducting similar voting experiments and that status quo methods involving mailing ballots are also insecure and fail to protect ballot secrecy. They see the critics' perspective as too narrow and note the loss of a chance to discover how well a set of methods works.

In two early chapters, the authors discuss problems with paper voting and criticisms of electronic alternatives. They note that paper systems have been used in American elections for more than 100 years and have never been free of failures or fraud. They also review a

### Electronic Elections The Perils and Promises of Digital Democracy

by R. Michael Alvarez and  
Thad E. Hall

Princeton University Press,  
Princeton, NJ, 2008.  
232 pp. \$29.95, £17.95.  
ISBN 9780691125176.

variety of security concerns surrounding electronic voting, such as the profound flaws revealed in 2003 through studies of source code for Diebold touch-screen voting equipment. Their consideration of criticisms of electronic voting seems inadequate. Nowhere do Alvarez and Hall discuss the conflicts of interest others have identified in the fact that the vendors pay for the laboratories that validate their equipment. Nor do they mention the basic objection that it is technically not possible to verify what a computer system as complicated as a voting machine will do under all the conditions that may arise. Validation is currently not possible, and secrecy does not inspire trust.

Time has not been kind to electronic voting systems in the United States, and in important respects the book's coverage ends too early. Alvarez and Hall discuss developments through the end of 2006. During 2007, California's secretary of state assigned teams of experts to study the voting systems approved for use in the state. The teams reported that the security mechanisms were inadequate and that the systems "contain serious design flaws ... which attackers could exploit to affect election outcomes" (1). This year, Ohio's sec-

## BROWSINGS

**Design for Democracy.** Ballot and Election Design. Marcia Lausen. University of Chicago Press and AIGA, Chicago, 2007. 186 pp. \$65, £35. ISBN 9780226470467.

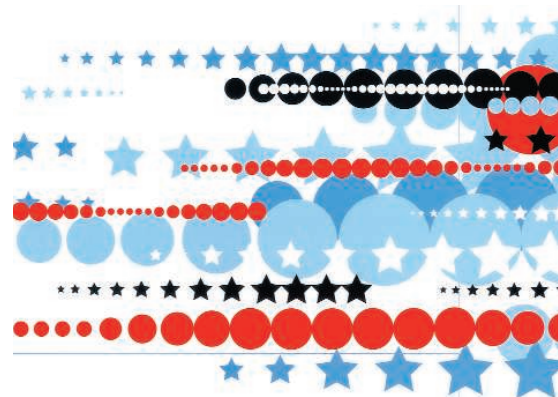
A group of graphics design specialists offer guidelines for improving the clarity of registration forms, signs, informational guides, administrative material, and ballots.

**Post-Broadcast Democracy.** How Media Choice Increases Inequality in Political Involvement and Polarizes Elections. Markus Prior. Cambridge University Press, Cambridge, 2007. 336 pp. Paper, \$27.99, £16.99. ISBN 9780521675338.

Prior explores political consequences of the changes in patterns of news exposure produced by the rise of broadcast television, expansion of cable TV, and growth of the Internet. His data-packed yet lucid account documents shifts in important aspects such as political knowledge and interest, turnout, and voter partisanship.

**Bad for Democracy.** How the Presidency Undermines the Power of the People. Dana D. Nelson. University of Minnesota Press, Minneapolis, 2008. 271 pp. \$24.95. ISBN 9780816656776.

People's unrealistic "expectations of what the president can and should do," Nelson claims, have fueled the continual expansion of the scope and power of the U.S. presidency. She argues that the trend must be reversed if citizens are to enjoy and practice the self-rule essential to democracy.



retary of state ruled against the use of touch-screen systems (2). A defect in Diebold's system software that caused votes to be lost in several Ohio counties is present in source code used in machines in jurisdictions throughout the country (3, 4).

Alvarez and Hall also consider the politics of election administration. They discuss the content of mass media coverage of voting technology along with survey evidence about public views of the topic. These aspects of *Electronic Elections* help flesh out the context for the scientific study and policy-making that Alvarez and Hall describe. The book offers a thoughtful early contribution to a new field of election science.

#### References

1. www.sos.ca.gov/elections/elections\_vsr.htm.
2. www.sos.state.oh.us/SOS/elections/voterInformation/equipment/VotingSystemReviewFindings.aspx.
3. M. Niquette, "Voting machine glitch admitted," *Columbus Dispatch*, 22 August 2008.
4. www.mcclatchydc.com/100/story/50485.html.

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## POLITICAL SCIENCE

# On Counterproductive Changes

Michael Johnston

Elections ought to be simple. Decide who is eligible to vote, put the options before them, tally up their choices, and then, by one set of electoral rules or another, declare the winners. But things do not always work out that way: vote totals are tampered with, equipment breaks down, and eligible electors are turned away while others vote early and often. Citizens in democracies around the world demand and, in the wake of electoral fiascos, often get aggressive rounds of clean election reform. But as Frederic Schaffer shows us in *The Hidden Costs of Clean Election Reform*, all too often the problems we see are the results of past reforms. Even more troubling, new measures frequently make matters worse.

Election reformers damage democracy with surprising frequency, producing what Schaffer—borrowing from medicine—terms

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### The Hidden Costs of Clean Election Reform

by Frederic Charles Schaffer

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Ithaca, NY, 2008.  
263 pp. \$35, £17.95.  
ISBN 9780801441158.

“iatrogenic” (doctor-caused) harm, a useful initial metaphor even if it is used in overly literal ways in much of the book. In some cases damage is inadvertent: reform measures may be poorly thought out, create perverse incentives, or be starved of resources and support. In many other cases, however, devious political operatives march under the banner of reform, enacting and enforcing measures that suppress the vote, facilitate cheating, and alienate citizens from the electoral process itself.

Schaffer (a research associate at MIT's Center for International Studies) has assembled an impressive database of recent clean election reforms in places ranging from Albania to Zimbabwe, many of which left democratic processes worse off than before. Lest we conclude that such countries' reformers are less skillful than ours, that database also includes 24 examples from various parts of the United States. In addition, Schaffer considers historical cases in detail: When, in 1852, France sought to prevent the practice of marking ballots (used to match voters with their choices), it ended up disallowing the votes of numerous citizens who did not understand the rules, who accidentally made additional marks, or who even wrote messages celebrating their choices. By 1881, rules against extraneous markings on ballots voided 3% of the national vote—a figure that rose to 20% in some districts. Schaffer also examines contemporary Taiwan, Venezuela, South Africa, and the Philippines in light of his own experiences in those countries.

Clean election reforms, Schaffer argues, come in three forms: controls on voter eligibility [e.g., who is entitled to vote or who has voted already (indicated by ink-stained fingers in many countries)]; voter insulation (e.g., the secret ballot or checks on vote-buying); and vote integrity (e.g., poll watchers from competing parties or automated vote tabulation). Schaffer's distinctive finding is that similar reform strategies can have quite different results, whereas differing mixes of reforms can produce similar outcomes in con-



**A vote clearly cast.** The French use transparent ballot boxes, as in their presidential election.

trasting settings. Voter eligibility rules may protect the right to vote, but they can also keep opposition voters away from the polls. Voter insulation can stop vote-buying but may also inhibit persuasive processes essential to democracy. While vote-integrity measures can make for safe voting and swift reporting of results, they may also bring partisan interests and unproven technologies right into the polling place.

The author attributes those outcomes to “the motives, knowledge, and capacities of the actors involved in crafting, implementing, or reacting to reforms.” Those actors, in turn, fall into four categories: lawmakers; election officials and workers; candidates and backers; and civic educators—those charged with teaching citizenship. Reform is not a matter of choosing better ideas over riskier ones—and certainly not a choice between clean-but-exclusive elections versus open-but-risky ones. Rather, reforms have much more to do with who steers the changes, using what resources, and toward what goals. Accordingly, Schaffer devotes a full chapter to each of his four key groups.

The result is an illuminating, broadly comparative, and useful critique of clean election reforms. In one sense, the author might be open to the accusation of having examined the shortcomings of politics only to discover more politics, but any such critique would sell the book short. Although “reform” is a powerful word for friends of democracy, not everything called a reform is a good idea. Often the term covers up self-serving ideas: My bill intended to triple the pay of academicians across the country will—of course—be called the Higher Education Reform Act of 2008. Worse yet, “reform” slogans can be used to create a sense of crisis where none exists, as witness recent calls for “Social Security reform”