

# From Intent to Outcome: Balloting and Tabulation Around the World

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## I. INTRODUCTION

*The will of the people shall be the basis of the authority of government; this will shall be expressed in periodic and genuine elections which . . . shall be held by secret vote or by equivalent free voting procedures.*

— *Universal Declaration of Human Rights*<sup>1</sup>

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1. Universal Declaration of Human Rights, Art. 21, United Nations General Assembly, Dec. 10, 1948.

Election winners often claim that their victory was a reflection of the voters' will, and in an ideal world those claims would always be accurate. The truthfulness of those claims, however, depends categorically on the reliability, accuracy, and security of the system used to cast and count votes. At the heart of any such system lies the voters' intent. An individual voter visits a polling location intending to select a certain person, party, or policy. She manifests her intent by marking a ballot.<sup>2</sup> Her ballot and others are tabulated, and the tabulation process finally produces an election outcome. Voting systems—comprised of balloting and tabulation processes—thus convert intent from a voter's amorphous internal choice into a notionally concrete and final election outcome. This conversion is important for any governmental system that demands democratic accountability and derives legitimacy from the consent of the governed. Candidates are truly elected by voters only if an election's outcome matches voters' collective intent. Voting systems therefore endeavor to accurately convert intent into outcome. Various forces can distort voters' intent and make an election's outcome an inaccurate result. A voting system combats these forces and strives for accuracy through accessibility, security, and reliability.

Accessibility is necessary for accuracy. Accuracy suffers if structural or legal obstacles keep a significant number of legitimate voters from either reaching a voting booth or understanding a ballot. An accessible voting system reduces obstacles in an effort to gather intent from the maximum possible number of eligible voters willing to exercise their franchise. It is convenient, efficient, and accommodating. Convenience boosts accessibility by minimizing voter effort necessary to cast a ballot. Efficiency increases accessibility by allowing election organizers to maximize the number of voting opportunities possible under resource limitations. Accommodation enhances accessibility by providing for the needs of expatriate voters, physi-

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2. We use "ballot" in the broadest sense of the word—any instrument used in the act of voting, including paper ballots, optical scan sheets, punch cards, direct recording electronic voting machines (a.k.a. DRE machines). See 29 C.J.S. *Elections* § 260 (2007) ("In election parlance 'ballot' is variously defined as a form of expression for a candidate to be voted for, the instrument used in the act of voting, a method of insuring the secrecy and integrity of the popular vote, the act of voting, or the result of voting.").

cally handicapped voters, illiterate voters, voters unable to speak a jurisdiction's dominant language, and other voters who require special attention.

Security is likewise essential to accuracy. Coercive and/or fraudulent acts can also distort voters' intent during balloting and tabulation. Election workers or others may submit counterfeit ballots, permit ineligible voters to vote, prevent eligible voters from voting, intimidate or bribe voters, or tabulate ballots fraudulently. A secure voting system strives to prevent these and similar acts as they may occur during the voting process.

Finally, reliability is important to accuracy. Accuracy can still be degraded if, even in the absence of outright coercion or fraud, a voting system's complicated or cumbersome nature results in a significant number of invalid ballots or tabulation errors. A reliable voting system minimizes balloting and tabulation flaws that make voters more likely to inadvertently mismark ballots and make election workers more likely to miscount ballots.

A voting system more accurately converts intent into outcome as its overall level of accessibility, security, and reliability increases. But accessibility, security, and reliability often work at cross-purposes—in other words, a system that is secure may be inaccessible or a system that is reliable may be insecure. Accordingly, many nations adopt balloting and tabulation methods that reflect an appropriate balance of these goals, given their particular circumstances and characteristics. A nation's geographic size, demographics, technological infrastructure, institutional maturity, public safety situation, and economic development all affect its chosen balance of accessibility, security, and reliability.

Since an exhaustive review is far outside this chapter's scope, it describes representative approaches from countries with a range of social, economic, and cultural characteristics. Balloting and tabulation methods in the United States, Brazil, and Iraq are surveyed in depth, and a cross section of novel efforts to promote accessibility and security in other nations is reviewed. These examples show that voting systems can accurately convert voters' intent into an election outcome using numerous paths. With varying degrees of success, each nation adopts measures tailored to make their voting systems accessible, secure, reliable, and ultimately, accurate.

## II. UNITED STATES

The State of Florida's balloting and tabulation problems during the 2000 presidential election have taken an appropriately prominent place in the history of balloting and tabulation. For weeks, news broadcasts were filled with court battles and "hanging chads." The ensuing controversy also touched off a flurry of legislative and academic activity related to voting.<sup>3</sup> The Florida debacle made plain that even voting systems in the world's oldest democracy and wealthiest nation are far from perfectly accurate. This section describes the United States' nationwide efforts at crafting an accurate voting system through accessibility, security, and reliability.

### A. Accessibility

A sizable number of Americans accessed voting systems in the United States during recent elections. Sixty-four percent of eligible voters cast a ballot in the 2004 presidential election, up from 60 percent in 2000.<sup>4</sup> National legislation, particularly the Help America Vote Act of 2002 (HAVA), sets some minimum national standards of accessibility, and a variety of U.S. government agencies also undertake activities to enhance voting systems' convenience, efficiency, and accommodation.

#### 1. Convenience

The U.S. government has endeavored to increase accessibility by making the voting process more convenient and, in particular, by easing the process of registration. The National Voter Registration Act (NVRA) aims to "establish procedures that . . . increase the number of eligible citizens who register to vote."<sup>5</sup> The NVRA requires states to offer voters registration opportunities when applying for or renewing a driver's license<sup>6</sup> and when visiting state public-assistance and disability agen-

3. Susan M. Boland & Therese Clarke Arado, *O Brave New World? Electronic Voting Machines and Internet Voting: An Annotated Bibliography*, N. ILL. U. L. REV. 313, 313 (2007) (noting the recent "explosion of research and literature on voting" and discussing a few prominent examples).

4. See e.g., U.S. Census Bureau, U.S. Voter Turnout Up in 2004 (2005), available at <http://www.census.gov/Press-Release/www/releases/archives/voting/004986.html>.

5. National Voter Registration Act of 1993 § 2(b)(1), Pub. L. 103-31 (1993) (codified at 42 U.S.C. § 1973gg(b)(1)).

6. *Id.* at § 5(a) (codified at 42 U.S.C. § 1973gg-3(a) ("Each State motor vehicle driver's license application[,], including any renewal application[,], submitted

cies.<sup>7</sup> It forces states to accept mail-in registration forms produced by the Federal Election Commission as well.<sup>8</sup> The United States has also made voting more convenient in recent years. All states allow postal voting (a.k.a. absentee voting), which permits voters to cast ballots if they are absent from their county of residence or unable to visit their designated polling place.<sup>9</sup> More than half of the states even allow voters to cast ballots by mail without providing justification, a traditional requirement.<sup>10</sup> Additionally, over 35 states now sponsor “early voting” programs, that allow voters to cast their ballots at polling places during a certain period before Election Day.<sup>11</sup>

Congress also tried to increase voting convenience through HAVA’s provisional voting measures. HAVA allows a voter who “is a registered voter in the jurisdiction” but whose name “does not appear on the official list of eligible voters of the polling place” to cast a provisional ballot.<sup>12</sup> The voter must affirm his eligibility in writing.<sup>13</sup> Provisional ballots and affirmations are set aside and then transmitted to state or local election officials “for prompt verification.”<sup>14</sup> Once verified, provisional ballots are counted.<sup>15</sup> Provisional ballots reduce “drags” on voting convenience like inaccurate voter lists and overly rigid precinct structures. HAVA’s gains, however, have been somewhat stymied by states’ implementation.<sup>16</sup> Only

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to the appropriate State motor vehicle authority under State law shall serve as an application for voter registration with respect to elections for Federal office.”).

7. *Id.* at §7(a) (codified at 42 U.S.C. § 1973gg-4(a)(2)).

8. *Id.* at § 6(a)(1) (codified at 42 U.S.C. § 1973gg-4(a)(1)).

9. John C. Fortier & Norman J. Ornstein, *The Absentee Ballot and the Secret Ballot: Challenges for Election Reform*, 36 U. MICH. J. L. REFORM 483, 505 (2003).

10. Jessica A. Fay, *Elderly Electors Go Postal: Ensuring Absentee Ballot Integrity for Older Voters*, 13 ELDER L.J. 453, 459 (2005).

11. Richard B. Saphire & Paul Moke, *Litigating Bush v. Gore in the States: Dual Voting Systems and the Fourteenth Amendment*, 51 VILL. L. REV. 229, 230 n.4 (2006).

12. Help America Vote Act of 2002 § 302(a), Pub. L. No. 107-252 (2002) (codified at 42 U.S.C. § 15482(a)).

13. *Id.* at § 302(a)(2) (2002) (codified at 42 U.S.C. § 15482(a)(2)).

14. *Id.* at § 302(a)(3) (codified at 42 U.S.C. § 15482(a)(3)).

15. *Id.* at § 302(a)(4) (codified at 42 U.S.C. § 15482(a)(4)).

16. *See generally*, Leonard Shambon & Keith Abouchar, *Trapped by Precincts? The Help America Vote Act’s Provisional Ballots and the Problem of Precincts*, 10 N.Y.U. J. LEGIS. & PUB. POL’Y 133, 140 (2006).

64.5 percent of provisional ballots cast in the 2004 election were officially counted—a major reason being that states inexplicably refused to count ballots that had been cast in the wrong precinct.<sup>17</sup>

## 2. Efficiency

The actual administration of American elections is largely decentralized and is typically undertaken by counties and similar local subdivisions. This arrangement lends itself to inefficiency caused by incongruent standards and broad duplication of efforts within a single state or even from precinct to precinct. HAVA attempted to reduce some needless election administration costs through four significant reforms. First, it required each state to implement a “single, uniform, official, centralized, interactive computerized statewide voter registration list defined, maintained, and administered at the State level.”<sup>18</sup> Second, it created the Election Assistance Commission (EAC) as a “national clearinghouse and resource for the compilation of information and review of procedures with respect to the administration of Federal elections.”<sup>19</sup> Third, HAVA mandated that each state designate a single office to supply mail-in voting information to the public.<sup>20</sup> Centralized and computerized voter lists, information-sharing facilitated by the EAC, and “one-stop shopping” for mail-in voting information should further maximize resources and thereby enhance accessibility for U.S. voters.

Additional challenges remain. Local-level decision making and a hodge-podge of voting equipment prevent states from better leveraging economies of scale. One major obstacle to efficiency is the way that U.S. jurisdictions carve up voting districts into precincts. Some states cap “the number of voters per precinct at unreasonably low levels,” resulting in inefficient use of resources.<sup>21</sup> Undersized precincts are an anachronism, dating back to days when voters’ travel options were limited.<sup>22</sup> Larger pre-

17. U.S. ELECTION ASSISTANCE COMM’N, FINAL REPORT OF THE 2004 ELECTION DAY SURVEY, PROVISIONAL BALLOTS 6-5 (2005), *available at* [http://www.eac.gov/election\\_survey\\_2004/toc.htm](http://www.eac.gov/election_survey_2004/toc.htm).

18. Help America Vote Act of 2002 § 303(a)(1)(A), (codified at 42 U.S.C. § 15483(a)(1)(A)).

19. *Id.* at § 202 (codified at 42 U.S.C. § 15322).

20. *Id.* at § 702 (codified at 42 U.S.C. § 1973ff-1(b)).

21. Shambon & Abouchar, *supra* note 16 at 133, 157–158.

22. *Id.* at 133, 140 (describing the development of voting precincts in the United States).

cincts could save time and money through fewer rented voting locations, added poll worker productivity, and more economical voting material and equipment distribution.<sup>23</sup> Some U.S. jurisdictions are now creating multi-precinct voting centers located near transportation and employment hubs to capture these efficiencies and increase accessibility.<sup>24</sup>

### 3. Accommodation

Balloting processes in the United States include several procedures aimed at accommodating expatriate voters, illiterate voters, non-English-speaking voters, and physically disabled voters.

Citizens residing outside the United States are eligible to register and cast mail-in ballots for federal elections.<sup>25</sup> These American expatriates simply complete one form to register and vote in any U.S. jurisdiction.<sup>26</sup> Proper submission of a single application allows an expatriate to vote in two consecutive, regularly scheduled general elections for federal office.<sup>27</sup> Expatriate voters may cast a general election “back-up” ballot, known as the Federal Write-In Absence Ballot, if they submit a timely application but do not receive a ballot before Election Day.<sup>28</sup>

Illiterate voters in the United States may receive assistance from “a person of the voter’s choice” in casting a ballot.<sup>29</sup> Some U.S. ballots feature an easy-to-recognize party logo above each party’s candidate listing that aids illiterate voters.<sup>30</sup> American jurisdictions could further

23. Joseph P. Harris, ELECTION ADMINISTRATION IN THE UNITED STATES 209–210 (Inst. for Gov’t Research, Studies in Admin. Study No. 27, 1934).

24. See generally, Robert M. Stein & Greg Vonnahme, *Election Day Vote Centers and Voter Turnout 7-16* (Working Paper, Prepared for the 2006 Annual Meetings of the Midwest Political Science Association), available at <http://www3.brookings.edu/gs/projects/electionreform/20060418Stein.pdf>.

25. 42 U.S.C. § 42 1973ff-1(a)(1) (“Each State shall permit absent uniformed services voters and overseas voters to use absentee registration procedures and to vote by absentee ballot in general, special, primary and runoff elections for Federal office.”).

26. Federal Post Card Application, available at <http://www.fvap.gov/pubs/onlinefpc.html>.

27. 42 U.S.C. § 1973ff-3(a).

28. *Id.* Online versions of the ballot can be found on the Federal Voting Assistance Program’s website, <http://www.fvap.gov/pubs/onlinefwab.html>.

29. Voting Rights Act of 1965 § 206, Pub. L. No. 89-1100 (codified as amended at 42 U.S.C.A. § 1973aa-6).

30. See, e.g., ALA. CODE § 17-6-29 (2007) (“Each political party . . . shall adopt, prepare, and file with the Secretary of State . . . an emblem to be printed

accommodate illiterate voters by printing multicolored ballots that feature candidates' photographs.

The Voting Rights Act (VRA) specifically accommodates non-English-speaking voters. It requires a state or a state's political subdivision to provide bilingual "registration or voting notices, forms, instructions, assistance, or other materials or information relating to the electoral process, including ballots" to qualified "language minority groups."<sup>31</sup> A "language minority group" includes voters who are of Alaskan Native, American Indian, Asian, or Hispanic heritage.<sup>32</sup> A "language minority group" with a below-average literacy rate qualifies for bilingual accommodation if the Director of Census considers it "a single language minority," deems it "limited-English proficient," and certifies that it comprises:

- More than 5 percent of a state's or a state political subdivision's voting-age citizens;
- More than 10,000 of a state political subdivision's voting-age citizens; or
- More than 5 percent of an Indian reservation's voting-age citizens.<sup>33</sup>

This VRA provision has increased ballot accessibility for covered language minorities.<sup>34</sup> But some voters, most notably Arab-Americans,

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at the top of the column of such ballot assigned to such party, as a distinctive and characteristic heading thereof."). *See also* Roy Saltman, *Challenging the Norms and Standards of Election Administration: Standards for U.S. Voting Systems*, Working Paper, IFES 6 (2006) (observing that in "the U.S., when a ballot is used with party columns or rows (such as with mechanical lever voting machines or mark-sense ballots), a party logo—which is easily recognized by both the literate and the illiterate—often heads the listing of each party's candidates."); Official Ballot for the General Election for the City of New York, County of Kings (Nov. 2, 2004), *available at* [http://www.vote.caltech.edu/media/documents/nyc\\_ballot.pdf](http://www.vote.caltech.edu/media/documents/nyc_ballot.pdf).

31. Voting Rights Act of 1965 § 203, Pub. L. No. 89-1100 (codified as amended at 42 U.S.C.A. § 1973aa-1a(c)).

32. *Id.* at § 203 (codified as amended at 42 U.S.C.A. § 1973aa-1a(b)(2)(A)).

33. *Id.* (codified as amended at 42 U.S.C.A. § 1973aa-1a(e)).

34. S. Rep. No. 97-417, at 66 (1982) (finding that 23 percent of surveyed Hispanic voters received assistance from a bilingual poll worker and 24 percent had used a bilingual ballot in the 1980 election).

were omitted from the list of possible “language minority groups.”<sup>35</sup> Also, the above-mentioned population concentration thresholds mean that scattered communities of “language minority groups” do not qualify for bilingual accommodation.<sup>36</sup> Cost concerns probably account for the VRA’s significant-but-incomplete step toward accommodating non-English-speaking voters.<sup>37</sup> These concerns may be alleviated in the increasing number of U.S. jurisdictions that use direct recording electronic (DRE) voting machines because preparing multilanguage electronic ballots is less cost prohibitive.<sup>38</sup>

Several recent pieces of federal legislation have made headway in accommodating physically disabled voters. Roughly 10 percent of Americans have a severe physical handicap, so disabled voter access is an important issue in the United States.<sup>39</sup> Studies show that access to polling stations affects disabled voter turnout, which is estimated to be 15 percent lower than the general U.S. population.<sup>40</sup> The Americans

35. Brenda Abdelall, *Not Enough of a Minority?: Arab Americans and the Language Assistance Provisions (Section 203) of the Voting Rights Act*, U. MICH. J.L. REFORM 911, 918 (2005).

36. Troy Yoshino, *Still Keeping the Faith?: Asian Pacific Americans, Ballot Initiatives and the Lessons of Negotiated Rulemaking*, 6 ASIAN L.J. 1, 3 (1999) (explaining that Asian Pacific Americans have difficulty receiving bilingual voting accommodations because of their small, widespread population and language diversity).

37. H.R. Rep No. 940417, at 93 (1975) (reciting a letter from the Governor of Alaska alerting Congress to the costly efforts to accommodate the 20 Alaskan Native dialects that are spoken by small populations).

38. Jerry Kang, *E-Racing E-lections*, 34 LOY. L.A. L. REV. 1155, 1167 (2001) (“Through e-voting, we can take advantage of the computer which can offer language translation services at the click of a button. Or even more simply, the ballots can be prepared in multiple languages—something not done with paper ballots because of the prohibitive costs of printing. Printing a ballot in just a handful of the popular Asian languages—Mandarin, Hindi, Tagalog, Korean, Vietnamese—is unrealistic; producing e-ballots in these languages, by contrast, is possible.”).

39. U.S. Census Bureau, *Disabilities Status: 2000*, Census2000 Brief (2003) <http://www.census.gov/prod/2003pubs/c2kbr-17.pdf>.

40. Douglas L. Kruse, Kay Schriener, Lisa Schur, & Todd Shields, *Empowerment Through Civic Participation: A Study of the Political Behavior of People with Disabilities*, Final Report to the Disability Research Consortium, Bureau of Economic Research, Rutgers University and New Jersey Developmental Disabilities Council (1999), available at <http://www.independentliving.org/docs5/>

with Disabilities Act (ADA) and the Rehabilitation Act broadly prohibit affirmative discrimination against any “qualified individual with a disability” but contain no specific vote-related guarantees to disabled citizens.<sup>41</sup> The VRA allows “a person of the voter’s choice” to assist a disabled voter.<sup>42</sup> The Voting Accessibility for the Elderly and Handicapped Act (VAEHA) mandates that each state’s political subdivision “assure that all polling places for Federal elections are accessible to handicapped and elderly voters”<sup>43</sup> but does not contain a specific standard for voter accessibility.<sup>44</sup> A General Accounting Office study found that state and local authorities had difficulty implementing the legal mandates for disabled voter access issued by the ADA, Rehabilitation Act, VRA, and VAEHA. Eighty-four percent of voting locations had one or more potential physical impediments to disabled voters casting a ballot.<sup>45</sup> Some voting locations tried to overcome this by offering curbside voting—where polling officials allow disabled voters to cast their

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disvoters.html (reporting that people with disabilities were about 15 percent less likely to vote than those without disabilities and suggesting that voting behavior of people with disabilities is affected by access to polling places).

41. Rehabilitation Act of 1973, Pub. L. 93-112 § 504 (codified at 29 U.S.C.A. § 794(a)) (“No otherwise qualified individual with a disability in the United States, as defined in section 705(20) of this title, shall, solely by reason of her or his disability, be excluded from the participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance.”); Americans with Disabilities Act of 1990, Pub. L. 101-336 § 202 (codified at 42 U.S.C.A. § 12132) (“no qualified individual with a disability shall, by reason of such disability, be excluded from participation in or be denied the benefits of the services, programs, or activities of a public entity, or be subjected to discrimination by any such entity.”).

42. Voting Rights Act of 1965 § 206, Pub. L. No. 89-1100 (codified as amended at 42 U.S.C.A. § 1973aa-6).

43. Voting Accessibility for the Elderly and Handicapped Act § 3, Publ. L. No. 90-435 (codified as amended at 42 U.S.C.A. § 1973ee-1(a)).

44. Michael Waterstone, *Civil Rights and the Administration of Election—Toward Secret Ballots and Polling Place Access*, J. GENDER, RACE, & JUST. 101, 111 (2004) (stating that the Voting Accessibility for the Elderly and Handicapped Act “offer[s] no definition or standards for ‘accessibility.’”).

45. U.S. Gen. Accounting Office, Rep. No. 02-107, *Voters with Disabilities: Access to Polling Places and Alternative Voting Methods 7* (2001), available at <http://www.gao.gov/special.pubs/d02107.txt>.

ballot outside of a polling location.<sup>46</sup> All jurisdictions allowed disabled voters to cast mail-in ballots, with many permitting permanent mail-in ballot status.<sup>47</sup> But disabled voters' advocates criticize these accommodations because they compromise the ability to cast an independent and timely ballot.<sup>48</sup> Congress passed HAVA, in part, because of these criticisms.<sup>49</sup> HAVA increased disabled voter access in two primary ways. First, it required at least one disabled-accessible voting machine per precinct.<sup>50</sup> Second, it provided funds to state and local authorities to "mak[e] polling places, including the path of travel, entrances, exits, and voting areas of each polling facility, accessible to individuals with disabilities, including the blind and visually impaired in a manner that provides the same opportunities for access and participation (including privacy and independence) as for other voters."<sup>51</sup> HAVA went "further in protecting the ability of people with disabilities to vote . . . independently and in a polling place than previous statutory and constitutional law."<sup>52</sup> Some worry, however, that Congress's failure to enumerate specific access standards and refusal to fully fund access-enhancing provisions in HAVA may limit its yet-to-be-determined effect.<sup>53</sup>

46. Hollister Bundy, *Election Reform, Polling Place Accessibility, and the Voting Rights of the Disabled*, 2 ELECTION L.J. 217, 232 (2003).

47. See Fay, *supra* note 10 at 453, 473 (discussing the recent trend of "permanent absentee" status across the United States).

48. See, e.g., Ruth Colker, *Anti-Subordination Above All: A Disability Perspective*, 82 NOTRE DAME L. REV. 1415, 1479 (2007) (observing that "[a]bsentee balloting requires additional proactive steps by voters, and forces them to make up their minds before the last crucial days of the election campaign.").

49. *Id.* at 1415, 1457 ("The lack of success of many of . . . lawsuits under the ADA, coupled with reports about inaccessible voting in the 2000 presidential election, caused Congress to enact the Help America Vote Act of 2002 (HAVA).").

50. Help America Vote Act of 2002 § 301(a)(3)(B), Pub. L. No. 107-252 (2002) (codified at 42 U.S.C. § 15481(a)(3)(B)) (requiring that voting systems use "at least one direct recording electronic voting system or other voting system equipped for individuals with disabilities at each polling place.").

51. *Id.* at § 261(b)(1) (codified at 42 U.S.C. § 15421(b)(1)).

52. Waterstone, *supra* note 44 at 101, 113.

53. Christina J. Weis, *Why the Help America Vote Act Fails to Help Disabled Americans Vote*, 8 N.Y.U. J. LEGIS. & PUB. POL'Y 421, 450–454 (2005) (remarking that it is "critical that Congress fully fund the HAVA so that it is possible for cash-strapped municipalities to acquire accessible equipment and improve polling site accessibility."). See Matthew Murray, *GOP Balks at Request for HAVA*, ROLL

## B. Security

Recent reforms in the United States have “moved in the direction of convenience voting and away from the traditional polling place.”<sup>54</sup> Some feel that these changes have come at the expense of security.<sup>55</sup> New balloting and tabulation technologies also present new security problems. These problems and efforts to confront them will be reviewed at three stages of the voting process: before voters mark their ballots, the actual marking of ballots or otherwise recording votes, and finally the tabulation and other activities that follow the actual ballot-marking stage.

### 1. Before Voters Mark Ballots

In general, most voters in the United States must register before voting.<sup>56</sup> Their names are compiled into a voter registration list that is used to authenticate their identity at a local polling station.<sup>57</sup> It takes considerable effort to maintain these voter lists. Every year about 30 to 35 million people move residences, turn 18 years old, or die.<sup>58</sup> Voter lists can thus “contain a large number of duplicate and erroneous entries.”<sup>59</sup> Inaccurate voting lists can pose a security problem because they present a greater opportunity for ineligible persons to cast ballots. HAVA tries to minimize this problem by requiring each state to implement a “single, uniform, official, centralized, interactive computerized statewide voter registration list defined, maintained, and administered at

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CALL, Feb. 13, 2007 (no page available) (reporting that “House Republicans are balking at Democratic calls to hand over \$800 million to states for new voting machines and poll worker training” that was authorized under HAVA).

54. Fortier & Ornstein, *supra* note 9 at 483, 484.

55. *See, e.g., id.*

56. North Dakota does not require voter registration. Seven states—Idaho, Maine, Minnesota, Montana, New Hampshire, Wisconsin, and Wyoming—all have same-day registration.

57. *See* Eric A. Fisher & Kevin J. Coleman, *Voter Registration Systems 1* (American University, Working Paper, July 22, 2006), available at [http://american.edu/ia/cdem/usp/hava\\_papers/Fischer\\_Coleman-Voter\\_Registration\\_Systems-AU.pdf](http://american.edu/ia/cdem/usp/hava_papers/Fischer_Coleman-Voter_Registration_Systems-AU.pdf) (“The fundamental purpose of a voter-registration system is to restrict access to the voting booth—to ensure that only those people entitled to vote in a given jurisdiction can do so, and that they each vote only once.”).

58. *Id.* at 3.

59. *Id.*

the State level.”<sup>60</sup> The government agency in charge of maintaining the statewide voter list is also required to coordinate with other agencies to remove ineligible and deceased citizens.<sup>61</sup> Another security risk is fraudulent mail-in registration.<sup>62</sup> HAVA attempts to mitigate this risk by requiring first-time registrants to submit proof of identification.<sup>63</sup> The NVRA also permits states to require voters to appear “in person” at a polling place if they mailed their registration and have not previously voted in a jurisdiction.<sup>64</sup>

No national standard mandates that voters present a certain type of identification upon arriving at polling stations. In fact, most states do not require voters to present identification before voting.<sup>65</sup> Others require voters to identify themselves by presenting photo identification, providing nonphoto identification, signing affidavits, taking oaths, or reciting personal information.<sup>66</sup> Some feel that the lack of identification requirements in the United States is a voting security problem.<sup>67</sup>

## 2. Voters Mark Ballots

To protect against coercion while voters mark ballots, the United States has well-established norms of voter seclusion and ballot anonymity. All states have adopted the “Australian ballot”—government-printed, uniform ballots that are cast in secret by the voter.<sup>68</sup>

60. Help America Vote Act of 2002 § 303(a)(1)(A), Pub. L. No. 107-252 (2002) (codified at 42 U.S.C. § 15483(a)(1)(A)).

61. *Id.* at § 303(a)(2)(A), Pub. L. No. 107-252 (2002) (codified at 42 U.S.C. § 15483(a)(2)(A)).

62. *See generally* William T. McCauley, *Florida Absentee Voter Fraud: Fashioning an Appropriate Judicial Remedy*, 54 U. MIAMI L. REV. 625 (2000).

63. Help America Vote Act of 2002 § 303(a)(4), Pub. L. No. 107-252 (2002) (codified at 42 U.S.C. § 15483(a)(4)).

64. National Voter Registration Act of 1993 § 7(c), Pub. L. 103-31 (1993) (codified at 42 U.S.C. § 1973gg-5(c)).

65. Spencer Overton, *Voter Identification*, 105 MICH. L. REV. 631, 640 (2007) (“In 2005, two-thirds of the U.S. population lived in the majority of states that did not request documentary evidence at the polls beyond federal requirements for first-time voters.”).

66. *Id.* at 631, 640–641.

67. Commission on Federal Election Reform, *Summary of Recommendations* 2.5.1 (2005), available at [http://www.american.edu/ia/cfer/report/CFER\\_summary.pdf](http://www.american.edu/ia/cfer/report/CFER_summary.pdf).

68. L.E. FREDMAN, *THE AUSTRALIAN BALLOT: THE STORY OF AN AMERICAN REFORM* 46, 98 (Mich. State, 1968).

Systemic concerns with security mostly pertain to specific voting groups. Disabled voters may face coercion because some jurisdictions provide only curbside, assisted, or mail-in voting.<sup>69</sup> None of these methods guarantee disabled voters the opportunity to vote in secret. HAVA promises disabled voters the right to cast a secret and independent ballot in more absolute terms than past legislation, but the ultimate effect of this guarantee is still undetermined.<sup>70</sup> Postal voters may also be easily coerced while they mark their ballot.<sup>71</sup> Several relatively recent voting scandals in the United States have involved postal voting.<sup>72</sup> A handful of states have tried to reduce fraud and coercion related to postal voting by requiring witness signatures or notary verification.<sup>73</sup>

### 3. After Voters Mark Ballots

Fraud can occur during the tabulation of voters' ballots. The U.S. Department of Justice actively prosecutes voter fraud.<sup>74</sup> And HAVA requires that all voting systems have the *capacity* to be audited.<sup>75</sup> But perhaps the latest and greatest fraud-related concern in the United States is the

69. See, e.g., Ruth Colker, *Anti-Subordination Above All: A Disability Perspective*, 82 NOTRE DAME L. REV. 1415, 1479 (2007) (observing that “[a]bsentee balloting requires additional proactive steps by voters, and forces them to make up their minds before the last crucial days of the election campaign.”).

70. Help America Vote Act of 2002 § 301(a)(3)(A), Pub. L. No. 107-252 (2002) (codified at 42 U.S.C. § 15481(a)(3)(A)) (requiring voting systems to “be accessible for individuals with disabilities, including nonvisual accessibility for the blind and visually impaired, in a manner that provides the same opportunity for access and participation (including privacy and independence) as for other voters.”). Weis, *supra* note 53 at 421, 450–454 (remarking that it is “critical that Congress fully fund the HAVA so that it is possible for cash-strapped municipalities to acquire accessible equipment and improve polling site accessibility.”).

71. William T. McCauley, *Florida Absentee Voter Fraud: Fashioning an Appropriate Judicial Remedy*, 54 U. MIAMI L. REV. 625, 632 (2000).

72. Fortier & Ornstein, *supra* note 54 at 483, 513 (describing recent voting scandals in Florida, Alabama, Connecticut, Indiana, New York, and Pennsylvania).

73. Fay, *supra* note 10 at 453, 475–476.

74. See generally, U.S. Department of Justice, Press Release, Fact Sheet: Protecting Voting Rights and Prosecuting Voter Fraud, available at [http://www.usdoj.gov/opa/pr/2006/November/06\\_crt\\_738.html](http://www.usdoj.gov/opa/pr/2006/November/06_crt_738.html).

75. Help America Vote Act of 2002 § 301(a)(2), Pub. L. No. 107-252 (2002) (codified at 42 U.S.C. § 15481(a)(2)).

security of DRE voting machines. Stanford University Professor David Dill first raised concerns about DRE machine security after he reviewed the voting system source code of Diebold, an American DRE machine manufacturer.<sup>76</sup> A report published after a review of the source code concluded that the DRE machine's security was "far below even the most minimal security standards applicable in other contexts."<sup>77</sup> Potential security breaches were identified, including "homebrewed" DRE smartcards, web-based "attacks," and "malevolent poll workers" who could change the DRE machine configuration before Election Day.<sup>78</sup> Other reports have confirmed the existence of these threats.<sup>79</sup> These security breaches would allow an individual to disrupt or corrupt the voting process without leaving much of a trace.<sup>80</sup> Existing concerns were multiplied when Diebold's CEO wrote a fund-raising letter for George W. Bush claiming that he would "deliver" votes in Ohio for the president.<sup>81</sup>

Voter-verified paper trails (VVPTs) and open source code are generally seen as key fixes to potential DRE machine security problems. Twenty-eight states now require DREs to produce a paper record of each ballot that can be verified by the voter before his or her vote is counted.<sup>82</sup> Federal VVPT legislation is pending before Congress.<sup>83</sup> Open source code "refers to a computer program whose source code is made

76. Mary Wiltenberg, *A Better Ballot?*, CHRISTIAN SCIENCE MONITOR, Nov. 3, 2003.

77. Tadayoshi Kohno, Adam Stubblefield, Aviel D. Rubin & Dan S. Wallach, *Analysis of An Electronic Voting System 1* (prepared for the IEEE Symposium on Security and Privacy, Oakland, CA, May, 2004), available at <http://avirubin.com/vote.pdf>.

78. *Id.* at 4.

79. *See, e.g.*, Ariel J. Feldman, J. Alex Halderman, & Edward W. Felten, *Security Analysis of the Diebold AccuVote-TS Voting Machine*, available at <http://itpolicy.princeton.edu/voting/ts-paper.pdf>.

80. *Supra* note 77 at 4.

81. Adam Cohen, *The Good News (Really) About Voting Machines*, N.Y. TIMES, Jan. 10, 2007, at A1.

82. Verified Voting Foundation Website, Homepage, available at <http://www.verifiedvoting.org/>.

83. Voter Confidence and Increased Accessibility Act, text available at <http://thomas.loc.gov/cgi-bin/bdquery/z?d109:h.r.00550>.

available to the general public.”<sup>84</sup> Currently, the code for virtually all voting software is closely held by DRE machine vendors who “argue that the use of proprietary software is important both to protect their intellectual property rights and for security.”<sup>85</sup> Cal-Tech and MIT researchers propose a compromise approach between proprietary and public code by separating the DRE machine voter interface and vote-casting functions.<sup>86</sup> The software “for the latter would be open source and standardized[,] and for the former[,] proprietary and more flexible.”<sup>87</sup> No national consensus has been reached on the open source code issue.

### C. Reliability

A reliable voting system minimizes flaws that make voters more likely to mismark ballots and election workers more likely to miscount ballots. Voters can mismark a ballot by over-voting (marking too many choices on a ballot), under-voting (not marking one or more choices on a ballot), or making an unintended choice.<sup>88</sup>

Reliability problems in the United States are not simply caused by a particular balloting method like the infamous Florida “butterfly ballot.”<sup>89</sup> Because of its county-by-county and state-by-state arrangement for election administration, the United States faces some unique reliability issues. The definition of what constitutes a vote varies by jurisdiction. American voters used six different types of ballots in the 2006 election—punch cards, lever-punctured ballots, paper ballots, optical scan sheets, and electronic ballots.<sup>90</sup> Nearly 5 percent of counties even

84. Jeffrey W. Seifert, *Computer Software and Open Source Issues: A Primer*, CRS Report RL31627, 5 November 2002, p. 1.

85. Eric A. Fischer, Congressional Research Service, *Election Reform and Electronic Voting Systems (DREs): Analysis of Security Issues* 26 (Nov. 4, 2003).

86. R. Michael Alvarez et al., *Caltech/MIT Voting Technology Project, Voting: What Is, What Could Be* 58–64 (2001).

87. Fischer, *supra* note 85 at 7.

88. Jason B. Conn, *Race Against the Machine: An Argument for the Standardization of Voting Technology*, 12 WASH. & LEE J. CIVIL RTS. & SOC. JUST. 181, 187–188 (2006).

89. Eddie Bernice Johnson, *Democracy Missing in Action in Florida*, MICHIGAN CHRONICLE, Dec. 20, 2000, at A6.

90. Election Data Services, Press Release, *69 Million Voters Will Use Optical Scan Ballots in 2006*

used more than one type of ballot.<sup>91</sup> This great variation in standards and equipment is a reliability problem because it makes for unequal and unpredictable experiences and results. With ballots in particular, errors that “compromise one’s vote do not strike evenly across types . . . [and] error rates within a state often correlate with race and socioeconomic status.”<sup>92</sup> At least if one type of ballot or tabulation method were used, the possibility for election outcome distortion would lessen because errors would occur in relative uniformity across the jurisdiction. Different standards and equipment may also prevent government officials from effectively mitigating the flaws of any one particular method through special precautions or voter education.

Congress tried to address some of these reliability problems through five HAVA provisions. First, HAVA required each state to adopt a “uniform and nondiscriminatory standard[] that define[s] what constitutes a vote and what will be counted as a vote.”<sup>93</sup> Second, it mandated that all voting systems “permit the voter to verify the votes selected . . . before the ballot is cast and counted” to reduce over-voting, under-voting, and unintended choices.<sup>94</sup> Third, HAVA specifically targeted over-voting by requiring that each voting system notify voters of the occurrence and consequence of an over-vote.<sup>95</sup> Fourth, it established a common maximum tabulation “error rate” for voting systems.<sup>96</sup> Fifth, HAVA awarded money to replace punch card and lever voting systems with systems that have lower error rates.<sup>97</sup> These HAVA provisions have been largely successful. Almost one million votes were “recovered” due to a dramatic

91. *Id.*

92. Conn, *supra* note 88 at 181, 185.

93. Help America Vote Act of 2002 § 301(b)(6), Pub. L. No. 107-252 (2002) (codified at 42 U.S.C. § 15481(b)(6)).

94. *Id.* at § 301(a)(1)(A)(i) (codified at 42 U.S.C. § 15481(a)(1)(A)(i)).

95. *Id.* § 301(a)(1)(B) (codified at 42 U.S.C. § 15481(a)(1)(B)). HAVA also allows paper-ballot and punch-card voting systems to meet this requirement through voter education and instruction. Help America Vote Act of 2002 § 301(a)(1)(A)(iii), Pub. L. No. 107-252 (2002) (codified at 42 U.S.C. § 15481(a)(1)(A)(iii)).

96. Help America Vote Act of 2002 § 301(a)(5), Pub. L. No. 107-252 (2002) (codified at 42 U.S.C. § 15481(a)(5)) (“The error rate of the voting system in counting ballots . . . shall comply with the error rate standards established under section 3.2.1 of the voting systems standards issued by the Federal Election Commission which are in effect on the date of the enactment of this Act.”).

97. *Id.* at § 102(a) (codified at 42 U.S.C. § 15302(a)).

drop in the overall voting error rate.<sup>98</sup> The error rate may drop even lower in the future. One-third of the nation's counties, home to 82 million voters, changed voting equipment between 2000 and 2006.<sup>99</sup> Reliability may improve further as voters and poll workers familiarize themselves with these new systems and as voting equipment quality improves.<sup>100</sup>

### III. BRAZIL

Brazil's voting system is remarkable in at least two respects.<sup>101</sup> First, Brazil has compulsory voting for all literate citizens between 18 and 60 years old.<sup>102</sup> Second, Brazil is a world pacesetter in the adoption of new technology and the use of electronic means of balloting and election administration. It was the first nation to hold fully electronic elections.<sup>103</sup> Since 2000, all Brazilian voters have cast their ballots electronically.<sup>104</sup> Brazil is the only nation to employ a fully computerized system as the sole method of collecting and counting votes.<sup>105</sup> And one international NGO said that a recent Brazilian election was "tremendously clean,

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98. Charles Stewart, *Residual Vote in the 2004 Election*, 5 ELECTION L.J. 158, 168 (2006), available at [http://www.vote.caltech.edu/journals/ELJ-Stewart\\_06.pdf](http://www.vote.caltech.edu/journals/ELJ-Stewart_06.pdf).

99. Election Data Services, Press Release, *69 Million Voters Will Use Optical Scan Ballots in 2006; 66 Million Voters Will Use Electronic Equipment* (2006), available at [http://www.electiondataservices.com/EDSInc\\_VEStudy2006.pdf](http://www.electiondataservices.com/EDSInc_VEStudy2006.pdf).

100. See, e.g., *id.* (quoting Election Data Systems head Kimball Brace as saying "Unfortunately. . . history shows that it's the first election with new equipment when jurisdictions are most likely to experience problems.")

101. For a comprehensive, Portuguese-language bibliography on Brazil's voting system, see <http://www2.samurai.com.br/urnaeletronica/>.

102. Gabriel Michel, et al. *Electronic Voting for All: The Experience of the Brazilian Computerized Voting System 1* (Usability Professionals' Association 2005), available at [http://www.brunazo.eng.br/voto-e/textos/gabriel\\_michel\\_bresil.pdf](http://www.brunazo.eng.br/voto-e/textos/gabriel_michel_bresil.pdf).

103. Michael Elliott, *Brazil's Election Something to Celebrate*, TIME, at 43, Oct. 14, 2002, available at <http://www.time.com/time/columnist/elliott/article/0,9565,364455,00.html>.

104. Tomer Posner, *Application of Lean Management Principles to Election Systems* 50, Working Paper (CalTech/MIT Voting Technology Project 2006), available at [http://www.vote.caltech.edu/media/documents/wps/vtp\\_wp42.pdf](http://www.vote.caltech.edu/media/documents/wps/vtp_wp42.pdf).

105. *Id.* at 22.

competent[,] and decent.”<sup>106</sup> This section catalogues Brazil’s approach to creating an accurate voting system through accessibility, security, and reliability.

### A. Accessibility

Because of compulsory voting, Brazil’s voter turnout percentage is unusually high—hovering at or above 80 percent since the 1960s.<sup>107</sup> Compulsory voting presents an accessibility challenge for Brazil because of the large number of voters involved and because of the government’s obligation to ensure that all who are required to visit the polls can actually do so. Brazil’s voting system aims to enhance voting-system accessibility through convenience, efficiency, and accommodation.

#### 1. Convenience

Considering Brazil’s geographic size and its breadth of remote locations that have limited infrastructure, enhancing voter convenience seems like a difficult task. Brazilian officials were ambitious when they implemented electronic voting that allowed all voters—even those in remote villages—the convenience of casting ballots on high-tech machines.<sup>108</sup> Approximately 405,000 voting machines were spread nationwide among roughly 91.6 million voters.<sup>109</sup> This 226 voters-per-machine average is significantly better than some other democracies.<sup>110</sup>

106. Elliott, *supra* note 103 (quoting Peter Hakim, president of Inter-American Dialogue). See also Patrice M. Jones, *Brazil’s ATM-Style Balloting Draws Praise for Efficiency*, CHICAGO TRIBUNE, Nov. 1, 2002, at 6 (“It was a very well-run election,” said Anton Reel, a U.S. Federal Election Commission official who was invited by the Brazilian government to observe the first round of voting Oct. 6. “I was amazed by how fast they got the votes counted. They had it all by midnight, more or less, instead of the 36 days we waited for a decision in the 2000 [presidential] vote.”).

107. International IDEA, *Brazilian Voter Turnout Statistics*, [http://www.idea.int/vt/country\\_view.cfm?CountryCode=BR](http://www.idea.int/vt/country_view.cfm?CountryCode=BR).

108. Elliott, *supra* note 103.

109. Holli Riebeek, *Brazil Holds All-Electronic National Election*, Spectrum IEEE 25-26 (2002), available at [http://ieeexplore.ieee.org/xpl/freeabs\\_all.jsp?tp=&arnumber=1045582&isnumber=22409](http://ieeexplore.ieee.org/xpl/freeabs_all.jsp?tp=&arnumber=1045582&isnumber=22409).

110. See, e.g., IFES, Council of Representatives Election Composite Report Iraq 1 (2005), available at <http://www.ifes.org/publication/d2046fde59cd1eeda675eb611bfd4d9e/Council%20of%20Representatives%20Election%20Composite-Update20FebV3.doc> (describing Iraq’s average as being over 300).

Lack of reliable infrastructure may still impede voter access to polling locations outside of Brazil's major coastal cities.

## 2. *Efficiency*

A principal advantage of Brazil's uniform, fully electronic voting system is efficiency. Previously, balloting and tabulation took up to 15 days because of Brazil's geographic size and diversity.<sup>111</sup> Such an undertaking obviously took up huge quantities of human and financial resources. Voting and tabulation is significantly faster today. The simplicity of Brazil's e-voting machines allows voters to cast ballots quicker than in the past.<sup>112</sup> The entire 2002 election vote—about 100 million ballots—was tallied less than 10 hours after polls closed.<sup>113</sup> Perhaps even more noteworthy, Brazilian officials implemented this without incurring extravagant start-up costs. Brazil's e-voting machines cost only \$420 each, \$575 per machine with technical service and maintenance.<sup>114</sup> New electronic voting machines in the United States, by contrast, typically cost around \$2,800.<sup>115</sup> The cost difference can be attributed to Brazil's willingness to allow government agencies control over e-voting hardware and software design and to use machines that closely resemble the existing and widely used technology of automated teller machines.<sup>116</sup> Despite these successes, some room for improvement exists: user errors and long candidate lists have caused long wait times in some areas.<sup>117</sup> Still, overall, Brazilian officials have boosted accessibility by maximizing the voting opportunities possible under resource limitations.

111. Jones, *supra* note 106.

112. Larry Rohter, *Brazil Sets an Example in Computerizing Its National Elections*, N.Y. TIMES, Oct. 30, 2002, at A7.

113. Jones, *supra* note 106.

114. Posner, *supra* note 104. Technology Project 2006), available at [http://www.vote.caltech.edu/media/documents/wps/vtp\\_wp42.pdf](http://www.vote.caltech.edu/media/documents/wps/vtp_wp42.pdf).

115. Jonathan Berr, *Diebold's Voting Machine Expansion Rattles Investors, States*, Bloomberg Financial Information Website, <http://quote.bloomberg.com/apps/news?pid=nifea&&sid=aE76fVHoxr8>.

116. Jennifer Rich, *A Maker of ATM's Finds a Niche in Brazil's Needs*, N.Y. TIMES, Sept. 30, 2000, at C2.

117. Paulo Roberto Santhias, *Brazil Holds National Electronic Election*, Oct. 2002, <http://www.centerdigitalgov.com/international/story.php?docid=29221>.

### 3. Accommodation

Brazil also makes broad accommodations for illiterate voters, non-Portuguese-speaking voters, and blind voters.

Brazil has incorporated two special features into its voting machines to accommodate illiterate voters. One out of seven Brazilians is illiterate, so these features are important to improving voting-system accessibility.<sup>118</sup> First, voters need not read a candidate's name at voting time. Illiterate voters may simply key-in a number associated with a candidate to register their choice.<sup>119</sup> Remembering and recognizing a number is obviously a simpler task than reading a name. And these numbers are widely publicized by candidates prior to elections.<sup>120</sup> Second, the machine displays a 3-by-4 inch picture of the candidate whose number was entered by the voter.<sup>121</sup> This allows illiterate voters to confirm the correctness of their selection without needing to read from the machine's screen.

Because Brazil uses a fully electronic voting system, it can easily accommodate non-Portuguese-speaking voters. Future voting machines may, for example, be able to "offer language translation services at the click of a button." In this way, Brazil can prepare balloting programs in multiple languages. This is not as feasible with paper ballots because of high printing costs.<sup>122</sup>

Voting machines also aid blind voters in casting ballots. As mentioned, votes are cast by keying in a candidate's assigned number. All keys on the numerical pad are inscribed with Braille and the pressing of any key results in an audible sound.<sup>123</sup> Machines can be calibrated to read aloud candidates' names before votes are confirmed (heard by the voter through headphones, of course!)<sup>124</sup> and to play a tune that signifies voting is complete.<sup>125</sup>

118. Rohter, *supra* note 112.

119. Posner, *supra* note 104 at 39.

120. Santhias, *supra* note 117.

121. Posner, *supra* note 104 at 43 (featuring a screenshot of the voter display).

122. Jerry Kang, *E-Racing E-lections*, 34 *LOY. L.A. L. REV.* 1155, 1167 (2001)

123. Posner, *supra* note 104 at 39.

124. Gabriel Michel, *supra* note 102 at 2.

125. Santhias, *supra* note 117.

Brazil's efforts at accommodating illiterate voters, non-Portuguese-speaking voters, and blind voters increase accessibility by opening up participatory opportunities to otherwise-excluded segments of the population.

## B. Security

Voting-system security begins at the design of Brazil's electronic voting machines. Rather than relying on the private sector, three government agencies share the task of designing and updating Brazil's machines.<sup>126</sup> The National Institute of Space Research develops machine specifications, the Brazilian military develops machine software, and the Federal Electoral Court conducts tests.<sup>127</sup> Private-sector companies then bid for the opportunity to manufacture the e-voting machines.<sup>128</sup> Unisys and ProComp—a Brazilian company recently acquired by Diebold Election System—were the original machines' manufacturers.<sup>129</sup> This arrangement has apparently “resulted in tremendous improvements in [Brazil's] processes and equipment.”<sup>130</sup>

Each voting machine arrives at a polling station sealed.<sup>131</sup> It is tested immediately before use and monitored continually.<sup>132</sup> After voting, each machine prints out two paper copies of the voting results—one is posted at the polling place and the other is sent to Brasilia with an encrypted diskette.<sup>133</sup> The goal of the system is to “eliminate[] the intermediate processes that are subject to fraud, such as the large tables where the votes were once tallied.”<sup>134</sup> The voting system's other security features include encrypted programming language.<sup>135</sup>

126. Michael Hickins, *How Brazil Might Be the Model for E-Voting Reform*, INTERNET NEWS, Nov. 6, 2006, available at <http://www.internetnews.com/bus-news/article.php/3641956>.

127. Santhias, *supra* note 117.

128. Hickins, *supra* note 126.

129. Jennifer Rich, *A Maker of ATM's Finds a Niche in Brazil's Needs*, N.Y. TIMES, Sept. 30, 2000, at C2.

130. Michael Hickins, *supra* note 117.

131. *Id.*

132. Posner, *supra* note 104 at 39.

133. *Id.* at 40.

134. Jones, *supra* note 106 (quoting David Fleischer, a University of Brasilia political analyst).

135. Santhias, *supra* note 117.

For a short period, voting machines also printed receipts behind glass screens that enabled voters to verify their choices.<sup>136</sup> Paper receipts were eventually abandoned, however, because of cost and logistical concerns.<sup>137</sup> A substitute measure has replaced the viewable paper receipts.<sup>138</sup> A “microterminal” unit is connected to the voting machine, which “prompts the administrator to enter the voter ID number, shows the voter’s name, and requests the administrator to confirm the entry.”<sup>139</sup> A paper receipt then prints and drops into a ballot bag without affording voters the opportunity to verify their vote.<sup>140</sup> This can certainly be seen as a step backward for voting-system security because it repeals a protection against fraud during tabulation.

One security worry is that the paper vote trail produced at the end of elections prints out in the same order that votes were cast.<sup>141</sup> This may spoil ballot secrecy. Concerns also remain regarding vulnerability to “insider and outsider attacks,” including ballot stuffing by poll workers “who may use [voter] ID numbers of no-shows and cast ballots in their place.”<sup>142</sup>

### C. Reliability

The Brazilian voting machine is extremely simple, resembling in many ways a public telephone.<sup>143</sup> Each machine has an LCD screen and numeric keyboard.<sup>144</sup> A voter selects a candidate for a particular office from a list by keying in the candidate’s assigned number.<sup>145</sup> The machine displays “a photo of each candidate and a number beside [the

136. Leslie M. Mira, *For Brazil Voters, Machines Rule*, WIRED NEWS, Jan. 24, 2004, <http://www.wired.com/techbiz/media/news/2004/01/61654?currentPage=1>; Pedro A.D. Rezende, *Electronic Voting Systems—Is Brazil Ahead of Its Time?*, CRYPTOBYTES, RSA LABORATORIES (2004) [http://www.rsa.com/rsalabs/cryptobytes/CryptoBytes\\_Fall2004.pdf](http://www.rsa.com/rsalabs/cryptobytes/CryptoBytes_Fall2004.pdf).

137. Leslie M. Mira, *supra* note 136.

138. Gabriel Michel, *supra* note 102 at 2.

139. Posner, *supra* note 104 at 41.

140. *Id.*

141. *Id.* at 52.

142. *Id.* at 51.

143. Jones, *supra* note 106 (stating that Brazil’s “sleek voting boxes . . . are so simple to use, most voters learned how to operate them by watching pre-election advertisements on television.”).

144. Gabriel Michel, *supra* note 102 at 2.

145. *Id.*

candidate's] name and party affiliation" before the voter confirms her choice.<sup>146</sup> The voter then moves on to the next office and repeats the process.<sup>147</sup> Each vote is recorded onto flash memory, transferred to an encrypted disk, and transmitted to Brasilia, where votes are aggregated and counted by computer.<sup>148</sup> This is the balloting and tabulation process for all votes nationwide.<sup>149</sup>

Brazil's voting system creates residual votes—ballots that are spoiled or blank—at a higher rate than some other nations.<sup>150</sup> But its residual-vote rate dropped dramatically after the conversion to full electronic voting.<sup>151</sup> A variety of circumstances might be responsible for Brazil's lower error rate. For example, a typical reliability complaint about electronic voting machines is that they “flip” votes.<sup>152</sup> But no documented vote-flipping has occurred with Brazil's e-voting machines. Brazil's e-voting technology is simpler and easier to use than most electronic voting equipment.<sup>153</sup> Even where uncertain electricity supply might pose reliability problems, Brazil has taken care to make long-life back-up batteries available.<sup>154</sup> Moreover, the use of only one

146. Riebeek, *supra* note 109. See Posner, *supra* note 104 at 43 (featuring a screenshot of the voter display).

147. Rohter, *supra* note 112.

148. Riebeek, *supra* note 109.

149. Elliott, *supra* note 103.

150. Stephen Ansolabehere, Residual Votes Attributable to Technology an Assessment of the Reliability of Existing Voting Equipment 11 (Caltech/MIT Voting Technology Project, 2001) available at, [http://www.hss.caltech.edu/~voting/CalTech\\_MIT\\_Report\\_Version2.pdf](http://www.hss.caltech.edu/~voting/CalTech_MIT_Report_Version2.pdf) (stating that the U.S. residual-vote rate is 1.6 percent for electronic voting machines); Jones, *supra* note 106 (reporting that 10.7 percent of Brazil's votes in the 2002 elections were blank or spoiled). Please note that this could be “comparing apples to oranges” to some degree because the U.S. statistics include only those residual votes that are attributable to technology.

151. Rohter, *supra* note 112 (“Officials were also heartened by statistics indicating that the number of blank and spoiled ballots fell by nearly half, from 18.7 percent in the 1998 general election to 10.7 percent in the first round of voting.”).

152. Adam Cohen, *What's Wrong with My Voting Machine?*, N.Y. TIMES, Dec. 4, 2006, at A24.

153. See generally, Gabriel Michel, et. al., *supra* note 102.

154. Ted Selker & Jonathan Goler, *The Save System: Secure Architecture for Voting Electronically* 4, Working Paper (CalTech/MIT Voting Technology Project, 2004), available at [http://www.vote.caltech.edu/media/documents/wps/vtp\\_](http://www.vote.caltech.edu/media/documents/wps/vtp_)

voting process nationwide may allow Brazilian officials to better ameliorate errors through special processes or voter education.<sup>155</sup> Perhaps most importantly, Brazil's voting machines make it impossible to spoil a ballot by voting for more than one candidate.<sup>156</sup>

Brazil's e-voting machines are not without reliability problems, though. Just over 1 percent of machines suffered a malfunction before the 2002 election.<sup>157</sup> According to Brazilian election administrators, all of these were fixed or replaced prior to the election.<sup>158</sup> Additionally, Brazil's residual-vote total may be somewhat higher than other nations because of compulsory voting—the theory being that those who are compelled to vote may protest by abstaining or under-voting.<sup>159</sup>

#### IV. IRAQ

Democracy in Iraq had a banner year in 2005. After years under dictatorial and foreign control, Iraqis went to the polls three times in less than 11 months.<sup>160</sup> Merely holding three full-scale, competitive elections within one year is a laudable achievement for a nascent democracy home to racial strife, economic depression, and an active insurgency.<sup>161</sup> In January, Iraqis chose members of the Iraqi National Assembly, a

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wp12.pdf; Leslie M. Mira, *For Brazil Voters, Machines Rule*, WIRED NEWS, Jan. 24, 2004, <http://www.wired.com/techbiz/media/news/2004/01/61654?currentPage=1>.

155. See Posner, *supra* note 104 at 48 (describing Brazil's voter education efforts).

156. Rohter, *supra* note 112.

157. Jones, *supra* note 106.

158. Santhias, *supra* note 117.

159. *But See* Timothy J. Powell & J. Timmons Roberts, *Compulsory Voting, Invalid Ballots, and Abstention in Brazil*, 48 POL. RES. Q. 795, 816–20 (1995) (finding that political protest explains only some of the invalid ballots cast, and that the complexity of the ballot provides a better explanation).

160. See Kristina Arvanitis, *Lesson from Iraq: Electoral Legitimacy in the Shadow of Ethno-Religious Conflict*, 20 TEMPLE INT' AND COMP. L.J. 529, 529–532 (2007) (describing recent election in Iraq).

161. INTERNATIONAL MISSION FOR IRAQI ELECTIONS, IMIE ASSESSMENT TEAM FINAL REPORT 6 (2006), available at [http://www.imie.ca/pdf/team\\_report.pdf](http://www.imie.ca/pdf/team_report.pdf) (noting the success of the Independent Electoral Commission of Iraq conducting an election in difficult conditions).

transitional body responsible for drafting Iraq's constitution.<sup>162</sup> Iraqis ratified the newly drafted constitution in October.<sup>163</sup> In December, Iraqis elected members of the Iraqi Council of Representatives, a permanent parliamentary body.<sup>164</sup> The Iraqi-run Independent Electoral Commission of Iraq (IECI) administered all of these elections.<sup>165</sup> Iraq's voting system produced election outcomes that were roughly accurate reflections of voters' intent.<sup>166</sup> This section examines the IECI's imperfect but adequate strides in designing and implementing an accessible, secure, and reliable voting system under difficult conditions.

### A. Accessibility

Iraq's voter turnout figures for 2005 are impressive. Fifty-eight percent of voters cast a ballot in January;<sup>167</sup> 63 percent in October;<sup>168</sup> and nearly 80 percent in December.<sup>169</sup> All three turnout figures equal or exceed

162. Dexter Filkins, *Vote Over, Iraq Faces Task of Forming a Government*, N.Y. TIMES, Feb. 1, 2005, at A1.

163. Dexter Filkins & John F. Burns, *Iraqis Cast Votes on Constitution to Shape Future*, N.Y. TIMES, Oct. 16, 2005, at A1.

164. Dexter Filkins, *Iraqis, Including Sunnis, Vote in Large Numbers on a Calm Day*, N.Y. TIMES, Dec. 16, 2005, at A1.

165. See Coalition Provisional Authority Order Number 92—The Independent Electoral Commission of Iraq § 3 (2004), available at <http://www.ieci-ocv.org/Uploads/laws/Order%2092%20Electoral%20Commission.pdf> (establishing the IECI and defining its mission as administrator of Iraqi elections). The IECI was succeeded by a permanent organization called the Independent High Electoral Commission. Press Release, Security Council, Iraq Facing Complex Series of Overlapping Sectarian, Ethnic Conflicts, U.N. Doc. SC/9041 (June 13, 2007) (acknowledging the establishment of the Independent High Electoral Commission in Iraq).

166. See, e.g., International Mission for Iraqi Elections, Final Report on the December 15, 2005, Iraqi Council of Representative Elections 24 (2005), available at [http://www.imie.ca/pdf/final\\_report.pdf](http://www.imie.ca/pdf/final_report.pdf) (stating that “the election in Iraq could be described as imperfect, but very good and generally reflective of the voters' wishes.”); Sabrina Tavernise, *U.N.'s Observer in Baghdad Calls the Voting Valid*, N.Y. TIMES, Dec. 29, 2005, at A1 (quoting a United Nations representative as saying that Iraqi elections were “were transparent and credible.”).

167. Adeed Dawisha & Larry Diamond, *Iraq's Year of Voting Dangerously*, 17 J. OF DEMOCRACY 89, 93 (2006).

168. INDEPENDENT ELECTORAL COMMISSION OF IRAQ, CERTIFICATION OF THE CONSTITUTIONAL REFERENDUM FINAL RESULTS I (2005), available at [http://www.ieciraq.org/English/Frameset\\_english.htm](http://www.ieciraq.org/English/Frameset_english.htm).

169. INDEPENDENT ELECTORAL COMMISSION OF IRAQ, CERTIFICATION OF THE COUNCIL OF REPRESENTATIVES ELECTIONS FINAL RESULTS I (2005), available at [http://www.ieciraq.org/English/Frameset\\_english.htm](http://www.ieciraq.org/English/Frameset_english.htm).

those in many democratic nations around the world.<sup>170</sup> While high turnout suggests that Iraq's voting system was sufficiently accessible to a significant number of eligible voters, strong conclusions about excellent voter access in Iraq should be resisted.<sup>171</sup> This high voter turnout has been described as more a reflection of Iraqis' extraordinary desire to vote in their first truly competitive elections.<sup>172</sup> The IECI faced and still faces considerable obstacles to convenience, efficiency, and accommodation in creating an accessible voting system.

### 1. Convenience

The IECI made efforts to boost accessibility by minimizing voter effort necessary to cast a ballot. Organizers established an internationally acceptable standard of 500 or fewer voters per polling station.<sup>173</sup> The voter-per-polling-station average was 310 in January, 335 in October, and 385 in December.<sup>174</sup> The IECI grouped polling stations together at

170. See e.g., U.S. Census Bureau, U.S. Voter Turnout Up in 2004 (2005), available at <http://www.census.gov/Press-Release/www/releases/archives/voting/004986.html> (stating that 64 percent of U.S. citizens over the age of 18 voted in the 2004 election).

171. International Mission for Iraqi Elections, Final Report on the December 15, 2005, Iraqi Council of Representative Elections 20 (2005), available at [http://www.imie.ca/pdf/final\\_report.pdf](http://www.imie.ca/pdf/final_report.pdf) (concluding that Iraq's high voter turnout can "be attributed to the generally effective administration of the election by the IECI").

172. See, e.g., Walter Pincus & Anthony Shadid, *Iraq Faces Hurdles on Details of Elections*, THE WASH. POST, Nov. 30, 2004, at A12 (quoting an Iraqi as saying that "All the people—everywhere in the country—want to see legitimate power, and legitimate power can only come through popular elections.").

173. International Mission for Iraqi Elections, Final Report: Assessment of the January 30, 2005 Election Process, [http://www.imie.ca/rep\\_Jan30.html](http://www.imie.ca/rep_Jan30.html) (2005).

174. Figures used in the voter-per-polling-station calculation were: 27,550 polling stations for 8,550,571 voters in January; 29,360 polling stations for 9,852,291 voters in October; 31,348 polling stations for 12,098,248 voters in December. See IFES, Council of Representatives Election Composite Report Iraq 1 (2005), available at <http://www.ifes.org/publication/d2046fde59cd1eeda675eb611bfd4d9e/Council%20of%20Representatives%20Election%20Composite-Update20FebV3.doc>; INDEPENDENT ELECTORAL COMMISSION OF IRAQ, CERTIFICATION OF THE CONSTITUTIONAL REFERENDUM FINAL RESULTS 1 (2005), available at [http://www.ieciraq.org/English/Frameset\\_english.htm](http://www.ieciraq.org/English/Frameset_english.htm); INDEPENDENT ELECTORAL COMMISSION OF IRAQ, CERTIFICATION OF THE COUNCIL OF REPRESENTATIVES ELECTIONS FINAL RESULTS I (2005), available at [http://www.ieciraq.org/English/Frameset\\_english.htm](http://www.ieciraq.org/English/Frameset_english.htm).

centers in conveniently located public buildings around Iraq.<sup>175</sup> Utility infrastructure problems and public safety concerns frustrated the IECI's efforts, however. Lack of electricity at locations meant that polling stations nationwide were open for only 10 hours—from 7 a.m. to 5 p.m.—though voting was extended by one hour for the December election.<sup>176</sup> Public safety concerns forced officials to provide “inadequate numbers of polling centers and a less than optimal distribution of voting sites in some areas of the country.”<sup>177</sup> They reduced the number of polling centers nationwide from 9,000 to less than 6,000.<sup>178</sup> IECI officials also closed some planned polling centers on Election Day due to safety concerns, especially in insurgent-friendly areas of Iraq.<sup>179</sup> Moreover, vehicle traffic bans made it more difficult for voters to reach polling centers.<sup>180</sup> Iraq's voting system was therefore not perfectly convenient for Iraqi voters, but the IECI insists it endeavored to make the polls as accessible as possible.

## 2. Efficiency

The IECI attempted to create a cost- and time-efficient voting system. No official cost totals for the 2005 Iraqi elections can be located.<sup>181</sup> To

175. International Mission for Iraqi Elections, *supra* note 173 (commending the IECI for locating polling centers in prominent facilities well known to voters and close to voters' residences, especially schools).

176. John Blanchard, *Toward an Iraq Democracy*, SAN FRANCISCO CHRONICLE, Dec. 11, 2005, at A20.

177. International Mission for Iraqi Elections, IMIE Assessment Team Final Report 6 (2005), available at [http://www.imie.ca/pdf/team\\_report.pdf](http://www.imie.ca/pdf/team_report.pdf)

178. Thanassis Cambanis & Anne Barnard, *Iraq Election Logistics Juggle Politics, Fear*, THE BOSTON GLOBE, Jan. 25, 2005, at A1.

179. International Mission for Iraqi Elections, *supra* note 173 (stating that only “5,216 of the planned 5,244 polling places opened” due to public safety concerns for the January election).

180. Liz Sly & Aamer Madhani, *Millions Turn Out in Iraq Elections*, CHICAGO TRIBUNE, Dec. 16, 2005, at A1.

181. We cannot locate any final cost figures for the 2005 Iraqi elections. However, the Iraqi government *budgeted* \$250 million for inside-Iraq voting and \$92 million for out-of-country voting for the January election. Kenneth Katzman, *Iraq: Elections, Government, and Constitution*, U.S. Congressional Research Service Report 2, available at <http://leahy.senate.gov/issues/foreign%20policy/PDFS/IraqElections012006.pdf>. There is no reason to believe that the October referendum and the December election cost a drastically different amount. That would mean that Iraq spent an average of \$21 per registered voter for the election. This far exceeds the per-voter amount spent in Afghanistan, another post-

be sure, Iraq's first competitive and free elections cost more to administer than an election in an established democracy due to one-time start-up costs. The IECE's methods, however, suggest that they mitigated at least some expenses in an effort to maximize resources. Rather than engage in an expensive effort to create a voter registration list out of whole cloth, the IECE started with a Saddam Hussein-era food ration card database and utilized food ration distribution centers as venues for voter registration.<sup>182</sup> The IECE also selected a paper ballot for all three elections in 2005. Paper ballots have the least expensive start-up cost of any voting medium.<sup>183</sup> The IECE had greater challenges in making the voting system time-efficient, however. Weapon searches and other measures to ensure voter safety added considerably to voters' waiting time at polling centers.<sup>184</sup> The massive number of candidates on the January and December ballots also increased the time each voter spent in the voting booth.<sup>185</sup> Despite these challenges, the resource-limited IECE's efforts at a cost- and time-efficient voting system were worthwhile and allowed them to open more voting locations closer to voters' homes and workplaces.

### 3. Accommodation

The IECE made strides in accommodating expatriate voters, illiterate voters, non-Arabic-speaking voters, and voters with other special needs. It had difficulty accommodating physically disabled voters.

The IECE established an out-of-country voting system that allowed Iraqi nationals living abroad to vote in the January and December elec-

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conflict nation. See ACE Electoral Knowledge Network, Afghanistan Electoral Management Statistics [http://aceproject.org/epic-en/em/Epic\\_view/IQ+AF](http://aceproject.org/epic-en/em/Epic_view/IQ+AF). We cannot draw any specific conclusions about Iraq elections expenses without final figures and area-specific budget breakdowns.

182. Richard W. Soudriette, *What Iraq's Elections Teach Us About Democracy Building*, 32 HUM. RTS. Q. 22, 23 (2005).

183. See Graeme Orr, Bryan Mercurio & George Williams, *Australian Electoral Law: A Stocktake*, 2 ELECTION L.J. 383, 393 (2003) (observing that Australia has never embraced mechanical technology because "paper ballots and pencils have proven cheap and failsafe.").

184. See BBC News, *Online Guide to Iraq's Elections*, [http://news.bbc.co.uk/2/hi/middle\\_east/4522060.stm](http://news.bbc.co.uk/2/hi/middle_east/4522060.stm) (noting the presence of "extensive security arrangements" for the December election).

185. International Mission for Iraqi Elections, *supra* note 173 ("The fact that voters had two or three ballots to mark and 111 entities from which to choose increased the time that a voter spent in the polling booth, compared with the time required to mark one ballot with fewer choices.").

tions.<sup>186</sup> Persons over 18 years old were eligible to vote if they were Iraqi citizens, born in Iraq, or parented by Iraqi citizens.<sup>187</sup> These expatriates registered and cast ballots over three days at 560 polling centers in 15 countries worldwide.<sup>188</sup> They helped select 45 at-large seats for the Iraqi Council of Representatives election by casting nearly 300,000 votes in December 2005.<sup>189</sup> Despite this significant number of votes, fewer Iraqi ex-pats turned out to cast a ballot than anticipated. Organizers originally expected roughly one million voters.<sup>190</sup> The discrepancy is probably due to the long travel distances required to reach foreign polling centers.<sup>191</sup> Security concerns may have kept the IECI from using postal ballots or another highly accessible external voting method.<sup>192</sup>

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186. Independent Electoral Commission of Iraq Regulation 14-2005, Registration and Voting Out of Country § 2.2, available at [http://www.ieciraq.org/final%20cand/Regulation14-2005OCVEngfinal\[1\].pdf](http://www.ieciraq.org/final%20cand/Regulation14-2005OCVEngfinal[1].pdf); Iraq Elections Law, Art. 19, available at <http://www.ieci-ocv.org/Uploads/laws/Elections%20Law%20%20English.pdf>. (“Iraqis outside of Iraq shall vote in polling centres designated by IECI and the votes will be counted on the National level.”).

187. Independent Electoral Commission of Iraq Regulation 14-2005, *supra* note 186 at § 4.

188. The 15 countries were Australia, Austria, Canada, Denmark, Germany, Iran, Jordan, Lebanon, Netherlands, Sweden, Syria, Turkey, United Arab Emirates, the United Kingdom, and the United States of America. Independent Electoral Commission of Iraq Regulation 14-2005, *supra* note 186 at § 6.1; Frequently Asked Question—OCV Procedures, Independent Electoral Commission of Iraq Regulation available at <http://www.ieci-ocv.org/EN/Faq.php>.

189. Elections Law Art. 19 available at <http://www.ieci-ocv.org/Uploads/laws/Elections%20Law%20-%20English.pdf> (“Iraqis outside of Iraq shall vote in polling centres designated by IECI and the votes will be counted on the National level.”).

190. Hassan M. Fattah & Lizette Alvarez, *Iraqis Abroad Seem Reluctant to Vote, Too, Sign-Up Shows*, N.Y. TIMES Jan. 26, 2005, at A8.

191. Geographically large nations like the United States and Canada had seven polling centers and four polling centers, respectively. International Mission for Iraqi Elections, IMIE Assessment of Out-of-Country Voting (OCV) Iraq Council of Representatives Elections 13 (2006), available at <http://www.imie.ca/pdf/ocvapr06.pdf>.

192. Rainer Bauböck, *Stakeholder Citizenship and Transitional Political Participation: A Normative Evaluation of External Voting*, 75 FORDHAM L. REV. 2393, 2404 (2007) (stating that the main advantage of out-of-country voting centers is “a controlled environment where problems of secrecy of voting and verification of voter identity can be minimized.”).

Iraq's paper ballots and voting materials were designed to accommodate illiterate and non-Arabic-speaking voters. Ballots featured each political entity's color logo for illiterate voters.<sup>193</sup> Voting instructions and ballots were printed in Iraq's major languages—Arabic, Kurdish, and Turcman.<sup>194</sup> Some international organizations, however, still recommended that the IECI make greater efforts to accommodate “voters speaking only minority languages.”<sup>195</sup>

For the December election, the IECI held a dedicated voting period for voters with other special needs. Hospital patients, detainees not yet convicted of a crime, and Iraqi Security Forces voted over a three-day period before the general public went to the polls.<sup>196</sup> Over 290,792 votes were cast during this dedicated voting period.<sup>197</sup>

Despite these largely successful accommodation efforts, the IECI had difficulty providing for physically disabled voters who were not hospitalized. Possibly due to a limited budget, the government made no affirmative measures to accommodate these voters,<sup>198</sup> who account for

193. Walter Pincus & Anthony Shadid, *Iraq Faces Hurdles on Details of Elections*, THE WASH. POST, Nov. 30, 2004, at A12 (stating that each party registrant “has to provide a logo or symbol by which illiterate voters can identify them.”) See INDEPENDENT ELECTORAL COMMISSION OF IRAQ, POLLING AND COUNTING PROCEDURES PRESENTATION 9 (2005), available at [http://www.ieciraq.org/final%20cand/Procedures%20Presentation%20full%20version%20eng%202005\\_11\\_19.pdf](http://www.ieciraq.org/final%20cand/Procedures%20Presentation%20full%20version%20eng%202005_11_19.pdf) (showing sample ballots).

194. See Arabic “Polling Procedure” Poster, [http://www.ieciraq.org/img/CB\\_Poster\\_Polling%20Procedure\\_Ar.jpg](http://www.ieciraq.org/img/CB_Poster_Polling%20Procedure_Ar.jpg); Kurdish “Seat Allocation” Poster [http://www.ieciraq.org/final%20cand/pos2/PO\\_Poster\\_Seat%20Allocation\\_Kur%20Sorani.jpg](http://www.ieciraq.org/final%20cand/pos2/PO_Poster_Seat%20Allocation_Kur%20Sorani.jpg); Turcman “Mark Your Ballot” Poster, [http://www.ieciraq.org/final%20cand/pos2/PO\\_Poster\\_How%20to%20Mark%20Your%20Ballot%20Horizontal\\_Turc.jpg](http://www.ieciraq.org/final%20cand/pos2/PO_Poster_How%20to%20Mark%20Your%20Ballot%20Horizontal_Turc.jpg).

195. International Mission for Iraqi Elections, *supra* note 173.

196. See generally Independent Electoral Commission of Iraq, Special Voting Procedures for Detainees, Hospital Patients, and Security Forces, available at [http://www.ieciraq.org/final%20cand/Special%20Voting%20Procedures%20f%20Eng%202005\\_11\\_16.pdf](http://www.ieciraq.org/final%20cand/Special%20Voting%20Procedures%20f%20Eng%202005_11_16.pdf).

197. IFES, Council of Representatives Election Composite Report Iraq 15–16 (2005), available at <http://www.ifes.org/publicationd2046fde59cd1eeda675eb611bfd4d9e/Council%20of%20Representatives%20Election%20CompositeUpdate20FebV3.doc>.

198. IECI, POLLING AND COUNTING PROCEDURES PRESENTATION, *supra* note 193 at 22 (noting that there were no plans to give disabled voters special assistance).

4 percent of Iraq's population.<sup>199</sup> IECI regulations allowed disabled voters to receive assistance only from "a relative or friend of their choice, or [from] the presiding officer of the polling station."<sup>200</sup> This modest accommodation sacrifices disabled voters' ability to cast a secret and independent ballot.<sup>201</sup>

The IECI was not able to completely accommodate voters with special needs during the 2005 elections but its efforts empowered many who would not have otherwise exercised their franchise.

## B. Security

Considering Iraq's public safety challenges, racial tensions, and lack of democratic pedigree, the IECI confronted a particularly difficult task in creating a voting system that was secure from coercive and fraudulent acts. Nearly 2,000 complaints that alleged a wide array of electoral violations were submitted after the December election.<sup>202</sup> Some complaints can be chalked up to post-election bickering.<sup>203</sup> But many contained serious accusations. According to the IECI, 58 of the violations were potentially severe enough to affect the election's results.<sup>204</sup> Nevertheless, the IECI's prophylactic measures against coercion and fraud did succeed to varying degrees. Some of these measures are discussed below.

199. Press Release, UNHCR Launches New Appeal for Iraq Operations, Jan. 8, 2007, available at <http://siteresources.worldbank.org/IRFFI/641683821092419001661/21183744/UNHCRAppeal.pdf>.

200. Independent Electoral Commission of Iraq Regulation 7-2005, Polling and Counting § 4.4 (2005) [http://www.ieciraq.org/final%20cand/IECI%20Reg%202005%20Polling%20and%20Counting%20\\_Eng\\_%20as%20amended.pdf](http://www.ieciraq.org/final%20cand/IECI%20Reg%202005%20Polling%20and%20Counting%20_Eng_%20as%20amended.pdf).

201. Waterstone, *supra* note 44 at 101, 106–107 (discussing the importance of ballot secrecy and independence and how "accommodations" for physically handicapped voters can eliminate secrecy and independence.").

202. Press Release, Independent Electoral Commission of Iraq, *IECI Announces Decisions Taken on Red Complaints*, Jan. 17, 2005, available at [http://www.ieciraq.org/English/Frameset\\_english.htm](http://www.ieciraq.org/English/Frameset_english.htm).

203. International Mission for Iraqi Elections, Final Report on the December 15, 2005, Iraqi Council of Representative Elections 24 (2005), available at [http://www.imie.ca/pdf/final\\_report.pdf](http://www.imie.ca/pdf/final_report.pdf) (noting that many complaints of election misconduct came from political parties that had not done "as well as they had hoped.").

204. Press Release, *supra* note 202.

### 1. Before Voters Mark Ballots

The IECI implemented four principal measures to prevent coercive and fraudulent acts that occur before voters mark their ballots.

First, the IECI created a voter registry. A registry was an effort to cabin poll workers' discretion in extending voting opportunities, prevent ineligible persons from impersonating eligible voters, and stop persons from voting multiple times.<sup>205</sup> The registry covered only voters living in Iraq.<sup>206</sup> Creating a reliable registry for Iraq's first legitimate election was difficult due to severe time and money constraints. The IECI started with a food ration database created by Saddam Hussein's regime.<sup>207</sup> Voters subsequently added or corrected personal information at food distribution centers across Iraq.<sup>208</sup> While this method was the most efficient and feasible way to create a registry, the food ration database proved "difficult to adapt . . . for electoral purposes."<sup>209</sup> Among other problems, data reordering confused voters and printing errors omitted 600,000 names for the December election.<sup>210</sup> One international organization observed that most complaints to the IECI after the December election "related either directly or indirectly to the quality of the voters' list[]." <sup>211</sup> Other nations that use voter registries experience

205. *See* *Wilkinson v. Queen*, 269 S.W.2d 223, 226 (Ky. 1954) (concluding that voter registries are created "for the prevention of fraud and abuses in elections.").

206. Independent Electoral Commission of Iraq, *Voter Registration Update Procedures 12* (2005), available at [http://www.ieciraq.org/final%20cand/Voter%20Registration%20Update%20Procedures%20f%20eng%202005\\_07\\_03.pdf](http://www.ieciraq.org/final%20cand/Voter%20Registration%20Update%20Procedures%20f%20eng%202005_07_03.pdf) (requiring voter residency in "governorate of the voter registration centre.").

207. Richard W. Soudriette, *supra* note 182.

208. Independent Electoral Commission of Iraq, *Voter Registration Update Procedures 5* (2005), available at [http://www.ieciraq.org/final%20cand/Voter%20Registration%20Update%20Procedures%20f%20eng%202005\\_07\\_03.pdf](http://www.ieciraq.org/final%20cand/Voter%20Registration%20Update%20Procedures%20f%20eng%202005_07_03.pdf) (listing the duties of voter registration centers).

209. International Mission for Iraqi Elections, *Final Report on the December 15, 2005, Iraqi Council of Representative Elections 9* (2005), available at [http://www.imie.ca/pdf/final\\_report.pdf](http://www.imie.ca/pdf/final_report.pdf).

210. *Id.*

211. *Id.* at 4. *See* IFES, *Council of Representatives Election Composite Report Iraq 1* (2005), available at <http://www.ifes.org/publication/d2046fde59cd1eeda675eb611bfd4d9e/Council%20of%20Representatives%20Election%20Composite-Update20FebV3.doc> (stating that an Iraqi election observation group reported that there were "additions to the voters list in 47% of the locations they monitored.")

similar problems, however, so Iraq's registry still "satisfactorily met international standards."<sup>212</sup>

Second, the IECI required voters to bring personal identification to polling centers. Identification is required principally to prevent ineligible persons from impersonating eligible voters, and to stop persons from voting multiple times.<sup>213</sup> Voters living inside Iraq needed "some photographic identification to prove their identity."<sup>214</sup> But this requirement could be waived "at the discretion of the presiding officer of the polling station."<sup>215</sup> The availability of this waiver could have compromised security to some extent but it also boosted accessibility because distribution of identification documents, like any government service, should be expected to be spotty given the overall security situation in Iraq. Iraqis voting in the out-of-country program needed two forms of Iraqi or foreign government-issued identification that established voting eligibility.<sup>216</sup> Identification was particularly important with out-of-country voters because no registry of Iraqi ex-pats was created before Election Day.<sup>217</sup> Identification requirements were largely effective, but lax enforcement at polling centers in Istanbul, Turkey, caused the IECI to cancel the December election results from 16 out of 18 polling centers.<sup>218</sup>

Third, the IECI required that poll workers mark each voter's index finger with indelible purple ink, as a means to stop persons from vot-

212. International Mission for Iraqi Elections, Final Report on the December 15, 2005, Iraqi Council of Representative Elections 4 (2005), available at [http://www.imie.ca/pdf/final\\_report.pdf](http://www.imie.ca/pdf/final_report.pdf).

213. See Mitchell K. Wunsch, *No Photo Necessary: Georgia's Short-Lived Voter-Photo Statute*, 17 GEO. MASON U. CIV. RTS. L.J. 267, 272 (2006) (noting that proponents of identification requirements "claim that [they] offer[] a common-sense measure to combat fraud.").

214. Independent Electoral Commission of Iraq, Regulation 7-2005, Polling and Counting § 3.3 (2005), available at [http://www.ieciraq.org/final%20cand/IECI%20Reg%207-2005%20Polling%20and%20Counting%20\\_Eng\\_%20as%20amended.pdf](http://www.ieciraq.org/final%20cand/IECI%20Reg%207-2005%20Polling%20and%20Counting%20_Eng_%20as%20amended.pdf).

215. *Id.*

216. Independent Electoral Commission of Iraq, Out-of-Country Voting Website, Voter Information, <http://www.ieci-ocv.org/EN/VoterInformation.php>.

217. See Independent Electoral Commission of Iraq, Regulation 14-2005, Out of Country Voting, § 5.3 (2005) ("A voter is able to vote same day as the voters documents are accepted for registration.").

218. International Mission for Iraqi Elections, IMIE Assessment of Out-of-Country Voting (OCV) Iraq Council of Representatives Elections 1 (2006), available at <http://www.imie.ca/pdf/ocvapr06.pdf>

ing multiple times.<sup>219</sup> Polling officials inked fingers immediately before voters submitted their ballots.<sup>220</sup> They checked new voters' fingers for signs of ink before allowing them to mark ballots.<sup>221</sup> Many members of the Iraqi Security Forces unfortunately were not inked during their dedicated three-day voting period before the general election.<sup>222</sup> This resulted in several complaints to the IECI that alleged double voting by police and military personnel.<sup>223</sup> For the most part though, the indelible ink measure was well-implemented and helped "instill confidence in the [election] process."<sup>224</sup>

Fourth, the IECI disallowed postal voting. Voting via mail-in ballots is at least potentially more prone to fraud or coercion than voting at monitored polling locations.<sup>225</sup> The highly tense atmosphere surrounding the elections caused the IECI to favor security over the accessibility that postal voting offers.<sup>226</sup> All voters within Iraq were required

219. Spencer Overton, *Voter Identification*, 105 MICH. L. REV. 631, 679 (2007) ("In Iraq, voters dipped their thumbs in indelible ink when they cast a ballot. Indelible ink would not prevent voting by persons ineligible to vote who impersonate a registered voter, but it would prevent multiple voting by these individuals.").

220. Independent Electoral Commission of Iraq, Regulation 7-2005, Polling and Counting, § 4.5 (2005), available at [http://www.ieciraq.org/final%20cand/IECI%20Reg%207-2005%20Polling%20and%20Counting%20\\_Eng\\_%20as%20amended.pdf](http://www.ieciraq.org/final%20cand/IECI%20Reg%207-2005%20Polling%20and%20Counting%20_Eng_%20as%20amended.pdf).

221. *Id.* at § 4.6.

222. International Mission for Iraqi Elections, Final Report on the December 15, 2005, Iraqi Council of Representative Elections 20 (2005), available at [http://www.imie.ca/pdf/final\\_report.pdf](http://www.imie.ca/pdf/final_report.pdf).

223. *Id.*

224. Thanassis Cambanis & Anne Barnard, *Iraq Election Logistics Juggle Politics, Fear*, THE BOSTON GLOBE, Jan. 25, 2005, at A1; International Mission for Iraqi Elections, Final Report on the December 15, 2005, Iraqi Council of Representative Elections 21 (2005), available at [http://www.imie.ca/pdf/final\\_report.pdf](http://www.imie.ca/pdf/final_report.pdf) (saying that an Iraqi election observation group "noted few problems with voters being properly checked for indelible ink (2 percent of reports)").

225. Bauböck, *supra* note 192 ("the lack of a controlled environment where the integrity of the vote can be guaranteed.").

226. International Mission for Iraqi Elections, *Evaluation of the Out-of-Country Voting Program for the January 30, 2005, Iraqi Elections*, available at [http://www.imie.ca/rep\\_OCV.html](http://www.imie.ca/rep_OCV.html) ("While postal registration and/or polling could have been considered, the potential for fraud may have been too high given the difficulties with the Iraqi postal system.").

to vote at an assigned polling location.<sup>227</sup> All voters outside Iraq were required to visit one of 560 voting centers in 15 countries worldwide.<sup>228</sup> This allowed the IECI to better guard against fraudulent acts, particularly fraudulent submission of ballots or coercion of voters. Taken as a whole, the IECI's efforts helped reduce the effects of coercion and fraud on voters immediately before ballots were marked.

## 2. Voters Mark Ballots

Another concern for security is the risk that election workers and other persons can coerce voters while they are in the act of marking ballots. The best historical antidote for such coercion is secret and anonymous balloting procedures.<sup>229</sup> Balloting is secret if done in an environment where no one is able to monitor a voter.<sup>230</sup> Balloting is anonymous if a ballot can no longer be linked to an individual voter after it is cast.<sup>231</sup> Iraq's constitution guaranteed voters the right to a "direct, general, [and] secret ballot."<sup>232</sup> Ballots were marked by voters behind opaque screens and folded-over to obscure voters' selections.<sup>233</sup> Ballots were uniform, with no distinguishing marks.<sup>234</sup> The IECI also made a special effort to preserve ballot anonymity by mixing together votes cast during the three-day period open to Iraqi Security Forces, detainees,

227. Independent Electoral Commission of Iraq, Regulation 7-2005, Polling and Counting, §§ 3.1-3.2 (2005), available at [http://www.ieciraq.org/final%20cand/IECI%20Reg%207-2005%20Polling%20and%20Counting%20Eng\\_%20as%20amended.pdf](http://www.ieciraq.org/final%20cand/IECI%20Reg%207-2005%20Polling%20and%20Counting%20Eng_%20as%20amended.pdf).

228. See Independent Electoral Commission of Iraq Regulation 14-2005, Registration and Voting Out of Country § 3.4, available at [http://www.ieci-ocv.org/Uploads/Regulations/Regulation14-2005OCVEngfinal\[1\].pdf](http://www.ieci-ocv.org/Uploads/Regulations/Regulation14-2005OCVEngfinal[1].pdf).

229. See *Burson v. Freeman*, 504, 504 U.S. 191, 200-206 (1992) (providing details on the historic evolution of the secret ballot in the United States).

230. Bauböck, *supra* note 192.

231. *Id.*

232. Iraq Const. art. 5., available at [http://www.ieciraq.org/final%20cand/Constitution\\_Eng\\_UNs-13.pdf](http://www.ieciraq.org/final%20cand/Constitution_Eng_UNs-13.pdf).

233. INDEPENDENT ELECTORAL COMMISSION OF IRAQ, POLLING AND COUNTING PROCEDURES FOR THE COUNCIL OF REPRESENTATIVES ELECTION 17 (2005), available at, [http://www.ieciraq.org/final%20cand/Polling%20and%20Counting%20Procedures%20Council%20of%20Reps%20f%20Eng%202005\\_11\\_12.pdf](http://www.ieciraq.org/final%20cand/Polling%20and%20Counting%20Procedures%20Council%20of%20Reps%20f%20Eng%202005_11_12.pdf).

234. IECI, POLLING AND COUNTING PROCEDURES PRESENTATION, *supra* note 193 at 9 (showing sample ballots).

and hospital patients.<sup>235</sup> These guarantees, procedures, and efforts bore fruit. Voter intimidation occurred infrequently and virtually all voters cast their ballot in seclusion during the December election.<sup>236</sup>

### 3. After Voters Mark Ballots

The IECI tried to prevent the fraudulent tabulation of votes. The IECI attempted to “weed out” biased polling officials before the election by using a lottery system to randomly select staff from an applicant pool.<sup>237</sup> It enacted counting procedures that complied with international standards.<sup>238</sup> All ballots were counted and re-counted by at least two poll workers.<sup>239</sup> Polling officials were forced to reconcile the number of ballots in each of the ballot boxes with the total number of ballots cast at a polling station.<sup>240</sup> The IECI also conducted field audits at 111 polling centers in particularly fraud-prone areas of Iraq.<sup>241</sup> Despite these efforts, some fraud during ballot tabulation persisted.<sup>242</sup> The IECI pun-

235. IFES, Council of Representatives Election Composite Report Iraq 1 (2005), available at <http://www.ifes.org/publication/d2046fde59cd1eeda675eb611bfd4d9e/Council%20of%20Representatives%20Election%20Composite-Update20FebV3.doc>.

236. Iraq Election Information Network, Report on the Iraq Council of Representatives Election 6 (2005) available at, <http://www.iraqiein.org/english/> (finding that 4 percent of reporters witnessed voter intimidation and less than 1 percent witnessed problems with voter privacy while casting a ballot).

237. International Mission for Iraqi Elections, IMIE Assessment Team Final Report 3 (2005), available at [http://www.imie.ca/pdf/team\\_report.pdf](http://www.imie.ca/pdf/team_report.pdf) (“The IECI used a lottery system to recruit a polling staff of 220,000 from an applicant pool of 400,000 in preparation for” the October referendum.)

238. International Mission for Iraqi Elections, *supra* note 173 (stating that the Iraqi “counting procedures established by law respected international standards.”).

239. IECI, POLLING AND COUNTING PROCEDURES PRESENTATION, *supra* note 193 at 25 (showing sample ballots).

240. Independent Electoral Commission of Iraq, Regulation 7-2005, Polling and Counting, §§ 5.2 (2005), available at [http://www.ieciraq.org/final%20cand/IECI%20Reg%207-2005%20Polling%20and%20Counting%20\\_Eng\\_%20as%20amended.pdf](http://www.ieciraq.org/final%20cand/IECI%20Reg%207-2005%20Polling%20and%20Counting%20_Eng_%20as%20amended.pdf).

241. IFES, Council of Representatives Election Composite Report Iraq 9-11 (2005), available at <http://www.ifes.org/publication/d2046fde59cd1eeda675eb611bfd4d9e/Council%20of%20Representatives%20Election%20CompositeUpdate20FebV3.doc> (discussing the field audit program in depth).

242. International Mission for Iraqi Elections, IMIE Assessment Team Final Report 24 (2005), available at [http://www.imie.ca/pdf/team\\_report.pdf](http://www.imie.ca/pdf/team_report.pdf) (describing

ished some election workers involved as a deterrent to future would-be offenders.<sup>243</sup>

#### 4. Other

As with many elections held in post-conflict nations, election observers and political party agents played a key role in preventing fraud and coercion during the Iraqi elections. Observers provide a neutral assessment of the balloting and tabulation processes at a particular polling center to governmental or nongovernmental organizations.<sup>244</sup> Agents alert the political party that nominated them any time the voting process' impartiality is threatened.<sup>245</sup> Their presence deters fraud and coercion throughout the voting process. Over 125,000 IECI observers, nearly 950 international monitors, and more than 270,000 political party agents were deployed across Iraq during the December election in an effort to speedily report and correct illegal and unethical conduct.<sup>246</sup> Virtually all of these observers and agents received sufficient access to adequately observe the election process.<sup>247</sup> The election was billed as "one of the most observed in the whole world."<sup>248</sup>

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fraudulent activities by dominant party entities in certain Iraqi governates).

243. IFES, Council of Representatives Election Composite Report Iraq 9-11 (2005), available at <http://www.ifes.org/publication/d2046fde59cd1eeda675eb611bfd4d9e/Council%20of%20Representatives%20Election%20Composite-Update20FebV3.doc> (discussing the dismissal of poll workers involved in fraud).

244. See generally Independent Electoral Commission of Iraq, *IECI Code of Conduct for Referendum and Election Observers* (2005), available at [http://www.ieciraq.org/English/Frameset\\_english.htm](http://www.ieciraq.org/English/Frameset_english.htm).

245. See generally Independent Electoral Commission of Iraq, *Regulation 3-2005 Political Entity Agents* (2005), available at [http://www.ieciraq.org/English/Frameset\\_english.htm](http://www.ieciraq.org/English/Frameset_english.htm).

246. Adeed Dawisha & Larry Diamond, *Iraq's Year of Voting Dangerously*, 17 J. OF DEMOCRACY 89, 99 (2006).

247. International Mission for Iraqi Elections, *Final Report on the December 15, 2005, Iraqi Council of Representative Elections 21* (2005), available at [http://www.imie.ca/pdf/final\\_report.pdf](http://www.imie.ca/pdf/final_report.pdf) (noting that few problems with limited observer and agent access were reported).

248. Press Release, Independent Electoral Commission of Iraq, *Observers' Reports Tell of Good Conduct of Elections*, Dec. 24, 2005, available at [http://www.ieciraq.org/English/Frameset\\_english.htm](http://www.ieciraq.org/English/Frameset_english.htm).

### C. Reliability

These observers generally concluded that Iraq's balloting and tabulation processes were reliable. The IECI provided protocols that were uniform and thorough.<sup>249</sup> It chose a paper ballot for use in the 2005 elections.<sup>250</sup> Casting paper ballots is uncomplicated relative to some other balloting methods.<sup>251</sup> IECI polling officials and posters instructed voters on the proper marking method immediately before voters received a ballot.<sup>252</sup> Iraqi voters simply marked a box adjacent to the name and logo of a political party on their paper ballot.<sup>253</sup> The simplicity of marking a paper ballot arguably results in fewer voter-caused errors but the labor-intensive counting process opens doors for other reliability problems.<sup>254</sup> Iraq's ballots were counted manually.<sup>255</sup> The IECI tried to mitigate tabu-

249. International Mission for Iraqi Elections, *supra* note 173 (noting the thoroughness of procedures and ballot examples provided by the IECI); International Mission for Iraqi Elections, IMIE Assessment Team Final Report 2 (2005), available at [http://www.imie.ca/pdf/team\\_report.pdf](http://www.imie.ca/pdf/team_report.pdf) (“Voting and counting procedures in the law meet with democratic standards.”).

250. IECI, POLLING AND COUNTING PROCEDURES PRESENTATION *supra* note 193 at 6.

251. Frank E. Guerra, *Comment on Bush vs. Gore and the Clemens-Piazza Broken-Bat Incident*, 39 REV. DER. P.R. 197, 208 (2000) (noting that “Puerto Rico, for example, where voters employ a simple and easy-to-use pencil-and-paper ballot, only a miniscule percentage (0.43% on average) of all ballots cast is found invalid” compared with other jurisdictions that use more complicated methods.)

252. IECI, POLLING AND COUNTING PROCEDURES FOR THE COUNCIL OF REPRESENTATIVES ELECTION, *supra* note 233 at 9 (stating that the ballot paper issuer explains to the voter how to mark a ballot).

253. *Id.* at 34–35 (showing acceptable and unacceptable marks on the paper ballot).

254. Stephen Ansolabehere, Residual Votes Attributable to Technology An Assessment of the Reliability of Existing Voting Equipment 13 Caltech/MIT Voting Technology Project (2001) available at, [http://www.hss.caltech.edu/~voting/CalTech\\_MIT\\_Report\\_Version2.pdf](http://www.hss.caltech.edu/~voting/CalTech_MIT_Report_Version2.pdf) (“Paper ballots, optically scanned ballots, and lever machines appear to perform noticeably better than punch card methods and electronic devices. Paper might even be an improvement over lever machines and scanners.”).

255. IECI, POLLING AND COUNTING PROCEDURES FOR THE COUNCIL OF REPRESENTATIVES ELECTION, *supra* note 233 at 24–25 (describing manual ballot-counting procedures).

lation errors by recruiting well-educated Iraqis to count votes.<sup>256</sup> Iraq's balloting and tabulation processes produced official totals of spoiled and blank ballots that were consistent with international standards.<sup>257</sup> Just over 1 percent of all ballots cast in the January and December elections were invalid.<sup>258</sup> This compares favorably with recent elections in well-established democracies like Australia (5.2 percent),<sup>259</sup> France (5.4 percent),<sup>260</sup> and Japan (3.4 percent). Evidence suggests, however, that the actual number of Iraq's invalid ballots may in fact be slightly higher. Some Iraqi polling officials were unaware of the invalid ballot criteria and/or were unable to reconcile ballot totals.<sup>261</sup> Many reliability problems with the labor-intensive paper-ballot-counting process may subside as IECI officials gain greater training and hands-on experience.

## V. HIGHLIGHTED APPROACHES IN OTHER NATIONS

A number of other countries are experimenting with innovative approaches to boosting accessibility, security, and reliability. Undoubtedly, some will be discarded after a few years' trial, but some of these new methods will succeed and be mimicked by other countries. This section briefly reviews accessibility and security methods that are novel or unique today, but may become more widely used in the future. Specifically, this section highlights proxy voting in the United Kingdom,

256. International Mission for Iraqi Elections, *supra* note 173 (praising the IECI for recruiting many teachers and lawyers for polling official positions).

257. *Id.* ("Compared to international standards, the number of invalid ballots cast was unproblematic)."

258. IFES, Council of Representatives Election Composite Report Iraq 1 (2005), available at <http://www.ifes.org/publication/d2046fde59cd1eeda675eb611bfd4d9e/Council%20of%20Representatives%20Election%20Composite-Update20FebV3.doc>.

259. International Institute for Democracy and Electoral Assistance, Australia Voter Turnout Statistics for 2004 Parliamentary Elections [http://www.idea.int/vt/country\\_view.cfm?CountryCode=AU](http://www.idea.int/vt/country_view.cfm?CountryCode=AU).

260. International Institute for Democracy and Electoral Assistance, France Voter Turnout Statistics for 2002 Presidential Elections [http://www.idea.int/vt/country\\_view.cfm?CountryCode=FR](http://www.idea.int/vt/country_view.cfm?CountryCode=FR).

261. International Mission for Iraqi Elections, *supra* note 173 (mentioning the lack of training for some polling officials and stating that election "[o]bservers reported discrepancies during the ballot reconciliation in 15 to 20 percent of monitored cases" during the January election).

Internet voting in Estonia, expatriate voting in Italy, voter identity authentication in India, and photographic security measures in Yemen.

### A. Accessibility—Proxy Voting in the United Kingdom

Proxy voting increases voting system accessibility by accommodating voters who have infirmities, employment demands, or other circumstances that undermine their ability to cast a ballot.<sup>262</sup> A voter who cannot vote in person may authorize a proxy—another voter—to vote on her behalf.<sup>263</sup> Proxy voting is relatively rare but is used to a limited extent in Belgium, France, and the United Kingdom.<sup>264</sup>

In the United Kingdom, a voter wishing to designate a proxy must complete and submit a signed application at least six days before Election Day.<sup>265</sup> An applicant must disclose both her name and her proxy's name.<sup>266</sup> She must also persuade the appropriate electoral registration officer that she “cannot reasonably be expected to vote in person.”<sup>267</sup> Valid reasons for voting inability include:

- Cannot vote in one particular election (i.e., vacation, educational course, recently moved homes);
- Has a limiting physical condition;
- Is unable to vote because of employment obligations;
- Lives overseas; or
- Serves in the Armed Forces.<sup>268</sup>

Some applications must be supported by a third party. For example, if an applicant claims a limiting physical condition, her assertion

262. Alan Wall & Louise Olivier, Proxy Voting, ACE Electoral Information Network Encyclopedia, <http://www.aceproject.org/ace-en/topics/vo/voa/voa02/voa02e>.

263. Bauböck, *supra* note 192.

264. *Id.* at 2393, 2404-2905.

265. United Kingdom Electoral Commission, Application to Vote by Proxy at a Particular Election, *available at* <http://www.aboutmyvote.co.uk>.

266. *Id.*

267. Representation of the People Act 2000 (c.2) § 12(4)(4); United Kingdom Electoral Commission, Factsheet 02-05: Absent Voting in Great Britain (2002), *available at* [http://www.electoralcommission.org.uk/files/dms/AbsentvotinginGreatBritain\\_17985-6125\\_\\_E\\_\\_N\\_\\_S\\_\\_W\\_\\_.pdf](http://www.electoralcommission.org.uk/files/dms/AbsentvotinginGreatBritain_17985-6125__E__N__S__W__.pdf).

268. United Kingdom Electoral Commission, *Proxy Voting Information*, <http://www.aboutmyvote.co.uk/HowtoVote/ProxySelect.cfm>.

must be verified by a physician.<sup>269</sup> Once an application is processed, the proxy is usually sent a Proxy Poll Card, which is sufficient but not necessary identification for the proxy to cast a ballot.<sup>270</sup> Proxies must vote only at the location allocated to the applicant and may aid only two nonrelatives during one election.<sup>271</sup>

Proxy voting gives rise to significant security concerns.<sup>272</sup> As the United Kingdom's Electoral Commission said, "It is self-evident that the principle of the secret ballot is automatically overridden in the case of a proxy vote, and historically proxy voting has been prone to allegations of fraud."<sup>273</sup> But these concerns, and proxy voting itself, may gradually be less important to the United Kingdom's voting system. Since the advent of no-excuse postal voting in the United Kingdom, proxy voting has declined.<sup>274</sup> It is estimated that only about 0.54 percent of Britons voted via proxy in 2001.<sup>275</sup> Only time will tell whether the United Kingdom will continue this effort at expanding accessibility through accommodation.

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269. United Kingdom Electoral Commission, Application to Vote by Proxy Due to a Disability, *available at* <http://www.aboutmyvote.co.uk>.

270. U.K. ELECTORAL COMMISSION, ABSENT VOTING REVIEW, CONSULTATION PAPER 37 (2002), [http://www.electoralcommission.org.uk/files/dms/Absentvotingreview\\_cons\\_6628-6207\\_\\_E\\_\\_N\\_\\_S\\_\\_W\\_\\_.pdf](http://www.electoralcommission.org.uk/files/dms/Absentvotingreview_cons_6628-6207__E__N__S__W__.pdf).

271. Representation of the People Act 2000 (c.2) § 12(7)(1).

272. Alan Wall & Louise Olivier, Proxy Voting, ACE Electoral Information Network Encyclopedia, <http://www.aceproject.org/ace-en/topics/vo/voa/voa02/voa02e> ("Proxy voting is a method that may detrimentally affect the integrity of voting practice. It allows registered voters to appoint another person to vote in their name. Unlike assisted voting in voting stations, there can be no controls to ensure that the registered voter's instructions on how to vote are followed by the appointed proxy, and, therefore, it may very easily be subject to abuse."); Bauböck, *supra* note 192 ("Such wider inclusion comes at a considerable cost with regard to standards for the integrity of the vote. Since in a secret vote there is no guarantee that the elector will vote as instructed, the latter has in fact two or more votes, which violates the basic principle of one-person one-vote.").

273. U.K. ELECTORAL COMMISSION, ABSENT VOTING IN GREAT BRITAIN, REPORT AND RECOMMENDATIONS 18 (Mar. 2003), *available at* [http://www.electoralcommission.org.uk/files/dms/AbsentvotinginGBfinal\\_9869-7240\\_\\_E\\_\\_N\\_\\_S\\_\\_W\\_\\_.pdf](http://www.electoralcommission.org.uk/files/dms/AbsentvotinginGBfinal_9869-7240__E__N__S__W__.pdf)

274. *Id.* at 19.

275. U.K. ELECTORAL COMMISSION, ABSENT VOTING REVIEW, CONSULTATION PAPER 37 (Oct. 2002), *available at* [http://www.electoralcommission.org.uk/files/dms/Absentvotingreview\\_cons\\_6628-6207\\_\\_E\\_\\_N\\_\\_S\\_\\_W\\_\\_.pdf](http://www.electoralcommission.org.uk/files/dms/Absentvotingreview_cons_6628-6207__E__N__S__W__.pdf)

## B. Accessibility—Internet Voting in Estonia

Estonia justifiably considers itself a leader in e-government.<sup>276</sup> True to form, it held the world's first nationwide election where votes were cast via the Internet in 2005.<sup>277</sup> This foray into "I-voting" was motivated by Estonia's perennial problem with low voter turnout.<sup>278</sup> I-voting was therefore meant to increase accessibility through gains in convenience, efficiency, and accommodation.<sup>279</sup>

Estonia's dedication to technology made it an ideal place for the birthplace of Internet-based voting. Internet access is a constitutional right.<sup>280</sup> And before 2005, Estonians were required to carry identification cards equipped with a computer-readable microchip.<sup>281</sup> Officials simply adapted these cards for use in I-voting.<sup>282</sup> From the sixth to the fourth day before Election Day,<sup>283</sup> an Estonian voter may cast a ballot online by validating her ID card for online use, purchasing an ID-card reader (for approximately \$15), and entering a PIN number at the I-voting website.<sup>284</sup> The voter then makes a series of selections, which are later encoded, and approves her choices via digital signature.<sup>285</sup> The voter's personal data and encoded vote are stored until Election Day to

276. Alexander H. Trechsel, *Internet Voting in the March 2007 Parliamentary Elections in Estonia* 3 (Council of Europe Report, 2007), available at [http://www.eudo.eu/download/Report\\_Evoting\\_Estonia\\_for\\_the\\_CoE\\_2007.pdf](http://www.eudo.eu/download/Report_Evoting_Estonia_for_the_CoE_2007.pdf).

277. Wolfgang Drescher, *Dispatch from the Future*, WASHINGTON POST, Nov. 5, 2006, at B1.

278. Ülle Madise & Tarvi Martens, *E-Voting in Estonia 2005: The First Practice of Country-Wide Binding Internet Voting in the World* 2 (2005), available at [http://static.twoday.net/evoting/files/madise\\_martens\\_estonia2005\\_13-26.pdf](http://static.twoday.net/evoting/files/madise_martens_estonia2005_13-26.pdf).

279. Epp Maaten, *Internet Voting in Estonia*, Case Study (Apr. 2007), available at <http://www.epractice.eu/cases/1003> (Internet-published case study on European Union Government website) (mentioning the convenience and efficiency of e-voting).

280. Alexander H. Trechsel, *Internet Voting in the March 2007 Parliamentary Elections in Estonia* 13–14 (Council of Europe Report, 2007), available at [http://www.eudo.eu/download/Report\\_Evoting\\_Estonia\\_for\\_the\\_CoE\\_2007.pdf](http://www.eudo.eu/download/Report_Evoting_Estonia_for_the_CoE_2007.pdf).

281. Laura Sheeter, *Estonia Forges Ahead with E-Vote*, BBC News, Oct. 14, 2005, available at <http://news.bbc.co.uk/1/hi/world/europe/4343374.stm>.

282. Trechsel, *supra* note 276 at 8–9.

283. Maaten, *supra* note 279.

284. Trechsel, *supra* note 276 at 14.

285. ESTONIA NATIONAL ELECTORAL COMMITTEE, E-VOTING SYSTEM OVERVIEW 8, available at <http://www.vvk.ee/elektr/docs/Yldkirjeldus-eng.pdf>.

ensure that the voter casts only one ballot.<sup>286</sup> Traditional paper ballots are still used, with I-voting being merely an alternative to visiting a polling location.<sup>287</sup> In fact, the system gives “supremacy to paper ballots, so anyone who voted online can also go to a polling station on [Election Day] and . . . cancel[] out the vote they cast online.”<sup>288</sup>

The extent to which I-voting has increased the accessibility of Estonia’s voting system is unclear. In the abstract, I-voting certainly seems like a stride toward greater voter convenience—the Internet can enable ballots to be cast from home.<sup>289</sup> I-voting critics counter that any convenience gains only accrue to the technologically savvy.<sup>290</sup> Even so, as long as traditional voting opportunities are not worsened, the addition of I-voting would, in theory, make a net contribution to convenience.<sup>291</sup> Statistics are inconclusive thus far. Voter surveys showed that I-voting did little to draw new voters.<sup>292</sup> Moreover, less than 1 percent of eligible voters cast an I-vote in 2005.<sup>293</sup> Despite these results, I-voting advocates were encouraged that this number tripled for the 2007 elections.<sup>294</sup> They hope that I-voting has not had “an immediate effect on voting turnout [only because it] takes time to change people’s

286. Id. at 11–12, available at <http://www.vvk.ee/elektr/docs/Yldkirjeldus-eng.pdf>.

287. Trechsel, *supra* note 276 at 15.

288. Sheeter, *supra* note 281.

289. Maaten, *supra* note 279.

290. Drescher, *supra* note 277 (noting the uneven effect of e-voting on the Estonian population).

291. Ülle Madise & Tarvi Martens, *E-Voting in Estonia 2005: The First Practice of Country-Wide Binding Internet Voting in the World* 9 (2005), available at [http://static.twoday.net/evoting/files/madise\\_martens\\_estonia2005\\_13-26.pdf](http://static.twoday.net/evoting/files/madise_martens_estonia2005_13-26.pdf).

292. Alexander H. Trechsel, *E-Voting in the 2005 Local Elections in Estonia* (Council of Europe Report, 2005) (no page number online), available at [http://www.coe.int/t/e/integrated\\_projects/democracy/02\\_activities/02\\_e-voting/00\\_e-voting\\_news/finalreportevotingestoniaco6\\_3\\_06.asp#P241\\_27619](http://www.coe.int/t/e/integrated_projects/democracy/02_activities/02_e-voting/00_e-voting_news/finalreportevotingestoniaco6_3_06.asp#P241_27619) (“4.9% of the e-voters would certainly not have voted if the voting channel by internet would not have been offered; 13.6% of the e-voters “probably would not have” voted in this case.”).

293. Sheeter, *supra* note 281.

294. Maaten, *supra* note 279 (“In March 2007 parliamentary elections 30275 voters voted electronically. The turnout of i-voters from all eligible voters was 3.4% (respectively 0.9% in 2005) and 18% of all votes given during advance voting days were electronic (respectively 8% in 2005)”).

attitude[s] and electoral behavior” and that future elections will see greater levels of participation.<sup>295</sup>

Estonia’s I-voting is also touted as a “quicker, cheaper way of collecting and counting ballots.”<sup>296</sup> Start-up costs have been notably low during the first two Estonian I-voting elections and it is hoped that I-voting will allow the Estonian National Electoral Committee to streamline its organization and reduce total election costs in the future.<sup>297</sup> I-voting advocates also anticipate that it will improve the level of accommodation made for handicapped and out-of-country voters.<sup>298</sup>

Opponents of Internet voting often cite security concerns as a major drawback. Specifically in Estonia, many were concerned that I-voters’ right to change ballots would be abused. Additionally, some worried that “various attacks including worms, viruses, spy ware, spoofing, denial of service and others, can be used to compromise the voting results, to break the voter’s anonymity, or to interrupt the elections.”<sup>299</sup> But Estonia took multiple security precautions and both the 2005 and 2007 elections passed without significant incident or controversy.<sup>300</sup>

Through its Internet voting program, Estonia seems to have made its voting system somewhat more accessible while so far avoiding many potential security pitfalls.

### C. Accessibility—Expatriate Voting in Italy

Italy allowed expatriates to vote in national parliamentary elections for the first time in 2006.<sup>301</sup> Voting is open to both native-born Italians

295. Maaten, *supra* note 279.

296. Sheeter, *supra* note 281.

297. Maaten, *supra* note 279.

298. *Id.*

299. Ülle Madise & Tarvi Martens, *E-Voting in Estonia 2005: The First Practice of Country-Wide Binding Internet Voting in the World* 4 (2005), available at [http://static.twoday.net/evoting/files/madise\\_martens\\_estonia2005\\_13-26.pdf](http://static.twoday.net/evoting/files/madise_martens_estonia2005_13-26.pdf).

300. OSCE OFFICE FOR DEMOCRATIC INSTITUTIONS AND HUMAN RIGHTS, REPUBLIC OF ESTONIA PARLIAMENTARY ELECTIONS 2007 16–18 (2007), available at [http://www.vvk.ee/english/OSCE%20report\\_EST\\_2007.pdf](http://www.vvk.ee/english/OSCE%20report_EST_2007.pdf).

301. Barbara McMahon, *The Expat Factor*, GUARDIAN UNLIMITED, Mar. 23, 2006, <http://www.guardian.co.uk/elsewhere/journalist/story/0,,1738183,00.html> (no page available online) (“For the first time, some 3.5 million Italian citizens living in foreign countries are being allowed to vote for representatives in the forthcoming general election and to have a say over who will lead the country for

living abroad and children of Italian citizens.<sup>302</sup> Expatriates cast a postal ballot that must be received by national consulates at least three days before domestic voters go to the polls.<sup>303</sup> Italian expatriate voting's novelty is that rather than counting expatriates' ballots together with those of domestic voters, Italy has implemented a "discrete representation" model<sup>304</sup>—meaning that ex-pats "form a separate constituency to elect their own representatives."<sup>305</sup> Seven nations currently allow "discrete representation" for out-of-country voters, but Italy's representation is the "most extensive."<sup>306</sup> Twelve lower-house deputies and six senators are elected by approximately 3.5 million Italian ex-pats in four geographic regions: Europe, South America, North America, and the rest of the world.<sup>307</sup> This unique arrangement allows Italian expatriates' voices to be heard on the distinct issues that are important to them.<sup>308</sup> Italian leaders also paid special attention to out-of-country voters in the hotly contested 2006 elections because of the 18 expatriate-elected

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the next five years. They are already casting their votes by postal ballot, ahead of polling in Italy on April 9-10.").

302. BBC News, *Poll Gives Italian Expats a Voice*, Apr. 7, 2006, available at <http://news.bbc.co.uk/1/hi/world/europe/4886466.stm>.

303. Elisabetta Povoledo, *Italy Vote to Include Expatriates*, INTERNATIONAL HERALD TRIBUNE, Mar. 7, 2006, at 3, available at <http://www.iht.com/articles/2006/03/06/news/vote-5811193.php>.

304. Peter J. Spiro, *Perfecting Political Diaspora*, 81 N.Y.U. L. REV. 207, 210 (2006).

305. Bauböck, *supra* note 192.

306. *Id.* (the seven nations include: Cape Verde, Colombia, Croatia, France, Italy, Mozambique, and Portugal).

307. Povoledo, *supra* note 303 (The European constituency, which takes in Turkey and all of Russia, has two million registered voters. There are some 900,000 voters in South America. North and Central America accounts for about 400,000 voters and there are just under 200,000 in a constituency comprising Africa, Asia, and Oceania.).

308. Barbara McMahon, *The Expat Factor*, GUARDIAN UNLIMITED, Mar. 23, 2006, <http://www.guardian.co.uk/elsewhere/journalist/story/0,,1738183,00.html> (no page available online) (noting that expatriate voters in Italy are "concerned with preserving the Italian language and culture[,] . . . higher pension payments, easier ways to maintain their citizenship[,] . . . the extension and streamlining of services offered by consulates[, and] [i]mproving the satellite reception of the state broadcaster RAI.").

seats' importance in determining the balance of parliamentary power.<sup>309</sup> So the Italian program not only permits ex-pats to vote, it affords them participatory opportunities that resemble those of domestic voters.

Concerns about the program linger, though. Some think that the four-region setup disenfranchises Italians who live outside of large, concentrated Italian-immigrant populations.<sup>310</sup> Others believe that large-scale postal voting increases the risk of electoral fraud.<sup>311</sup> Indeed, the combination of postal voting and multiple ballot-receipt locations may pose acute security and reliability problems. Despite these potential drawbacks, Italy's expatriate voting program enhances accessibility by accommodating out-of-country voters to an unprecedented extent.

#### D. Security—Voter Authentication in India

India's voter identity authentication process takes a unique approach to preventing electoral fraud. A voter does not bring formal identification to the polls; she may vote as long as her name is on the voting roll. (This is commonplace in many jurisdictions outside of India as well.) India differs from other jurisdictions because the presence of partisan polling agents at the polls is the principal safeguard against voter impersonation.<sup>312</sup> A polling agent can challenge the identity of a voter whose name is found on the voter roll.<sup>313</sup> An agent is expected to have a list of "dead, absent and allegedly suspicious voters . . . prepared by [a] candidate or . . . party."<sup>314</sup> An agent may request that polling officials verify the identity of any voter named on this list without complying with formal challenge procedures.<sup>315</sup> An agent may commence a formal

309. *Id.* (stating that "Politicians from all parties have been criss-crossing continents and racking up air miles in a last-minute bid to win over foreign-based voters.").

310. Povoledo, *supra* note 303.

311. *Lorenzo's Vote*, GUARDIAN UNLIMITED, Apr. 6, 2006 (no page online), available at <http://www.guardian.co.uk/g2/story/0,,1747780,00.html>.

312. The Representation of the People Act § 49 (1951), available at [http://www.eci.gov.in/ElectoralLaws/HandBooks/MANUAL\\_OF\\_LAW\\_VOL\\_I.pdf](http://www.eci.gov.in/ElectoralLaws/HandBooks/MANUAL_OF_LAW_VOL_I.pdf) (describing the functions of polling agents).

313. ELECTION COMMISSION OF INDIA, HANDBOOK FOR POLLING AGENTS 32–34 (2006) available at, [http://www.eci.gov.in/ElectoralLaws/HandBooks/Handbook\\_for\\_Polling\\_Agents.pdf](http://www.eci.gov.in/ElectoralLaws/HandBooks/Handbook_for_Polling_Agents.pdf) (describing challenge procedures).

314. *Id.* at 32–33.

315. *Id.* at 33.

challenge to a voter's identity if she has "personal knowledge" that the voter's identity is false.<sup>316</sup> The agent must pay the presiding polling official a two-rupee challenge fee, which is refunded if the challenge is successful.<sup>317</sup> Upon commencement of a formal challenge, the presiding polling official must

- Warn the voter about the penalty for impersonation;
- Ask the voter whether her name is found in the voter roll; and
- Ask the voter to swear to his identity by signature or thumbprint.<sup>318</sup>

If a voter refuses to swear to his identity, the polling official will not allow him to vote.<sup>319</sup> If a voter swears to her identity, the polling agent must produce evidence of voter impersonation.<sup>320</sup> If the agent makes out a prima facie case that the voter's identity is false, the voter must produce evidence to rebut the challenge in order to cast a ballot.<sup>321</sup> This polling-agent challenge system relies heavily on competing parties' presence at each polling station to ensure that ineligible voters from all political backgrounds are screened. The system may therefore lose effectiveness in regions with one dominant faction because parties and/or candidates have little incentive to challenge and disqualify ineligible voters who favor their ideology. No empirical research exists to measure the polling-agent challenge system's effectiveness. This unorthodox method of detecting voter impersonation could, at the very least, be implemented in other jurisdictions as a secondary security measure.

### E. Security—Photo IDs and Voter Rolls in Yemen

Elections in Yemen have historically been marred by widespread voter-impersonation problems.<sup>322</sup> Yemen instituted significant reform to cor-

316. *Id.*

317. The Conduct of Elections Rules § 36 (1961) *available at*, [http://www.eci.gov.in/ElectoralLaws/HandBooks/MANUAL\\_OF\\_LAW\\_VOL\\_II.pdf](http://www.eci.gov.in/ElectoralLaws/HandBooks/MANUAL_OF_LAW_VOL_II.pdf).

318. *Supra* note 313, at 33.

319. *Id.*

320. *Id.*

321. *Id.* at 34.

322. Antonio Spinelli, *The Voter Registration System in Yemen*, United Nations Development Programme Electoral Support Project (April 2003), *available at* <http://aceproject.org/ero-en/regions/mideast/YE/The%20Voter%20Registration%20System%20in%20Yemen.pdf/view>.

rect this problem in 2003.<sup>323</sup> The most important changes were new photo identification cards and a photo voter registry.<sup>324</sup>

At the time of registration, each voter receives a permanent election card, which shows the voter's photograph, date of birth, election domicile, registration number, and registration date.<sup>325</sup> A voter may not cast a ballot without presenting a voter card upon arrival at a polling station.<sup>326</sup> The voter cards' anticounterfeiting measures include tamper-resistant security laminate.<sup>327</sup> Yemeni officials also hope to incorporate biometric data into the voter cards' next version.<sup>328</sup> Roughly 9.3 million cards were issued in 2006.<sup>329</sup>

The voter registry contains an exact replica of each voter card, with the same information and photograph.<sup>330</sup> If there is a conflict between it and a voter card, the registry "is considered [the] conclusive proof."<sup>331</sup>

323. *The Use of a Photo Roll*, Practitioners' Discussion on ACE Project Website (May 24, 2007), available at <http://aceproject.org/electoral-advice/archive/questions/replies/152268759/#364033454>.

324. IFES, ELECTION LAW REFORM IN YEMEN: SUPPLEMENTARY REPORT 8–9 (2005), available at <http://www.ifes.org/publication/3545312a460b9359a9b16a35f027be3f/FINALSupplRoLReport%20English.pdf>

325. Rafael López Pintor & Maria Gratschew, *Voter Registration and Inclusive Democracy: Analysing Registration Practices Worldwide* in VOTER TURNOUT SINCE 1945: A GLOBAL REPORT (Int'l Inst. for Democracy and Electoral Assistance, 2002), available at [http://www.idea.int/publications/vt/upload/VT\\_screenopt\\_2002.pdf](http://www.idea.int/publications/vt/upload/VT_screenopt_2002.pdf).

326. The General Elections and Referendum Law, Art. 18(a) (2001), available at <http://www.scer.org.ye/english/generalelectionslaw.htm>; PRESIDENTIAL ELECTIONS MANUAL, YEMEN SUPREME COMMISSION FOR ELECTIONS & REFERENDUM (2007), available at <http://www.scer.org.ye/english/presidentiaelecmanual.htm>.

327. Antonio Spinelli, *The Voter Registration System in Yemen*, United Nations Development Programme Electoral Support Project (April 2003), available at <http://aceproject.org/ero-en/regions/mideast/YE/The%20Voter%20Registration%20System%20in%20Yemen.pdf/view>

328. *The Use of a Photo Roll*, *supra* note 323.

329. Paul Harris, *2006 Yemen Elections Highlight Continued Progress*, ACE Project Electoral Network Website, Feb. 21, 2007, available at <http://aceproject.org/today/feature-articles/yemen-elections-highlight-continued-progress>.

330. *The Use of a Photo Roll*, *supra* note 323.

331. Rafael López Pintor & Maria Gratschew, *Voter Registration and Inclusive Democracy: Analysing Registration Practices Worldwide* in VOTER TURNOUT SINCE 1945: A GLOBAL REPORT 68 (Int'l Inst. for Democracy and Electoral Assistance, 2002), available at [http://www.idea.int/publications/vt/upload/VT\\_screenopt\\_2002.pdf](http://www.idea.int/publications/vt/upload/VT_screenopt_2002.pdf).

The registry provides a second layer of security should a voter-impersonator manage to create a counterfeit voter card.<sup>332</sup> Photos also facilitate deletion of ineligible persons from the voter registry. In 2006, Yemeni officials used voters' photographs to detect 60,000 multiple registrations and 240,000 underage voters.<sup>333</sup> (Voters could challenge their deletion before the registry was finalized.<sup>334</sup>)

The photo identification cards and photo voter registry seem to have reduced the occurrence of voter impersonation.<sup>335</sup> Many international organizations have reported that the conduct of Yemeni elections have improved markedly since 2003.<sup>336</sup> These security reforms can thus be seen “as a first, very positive step in a good direction” for Yemen.<sup>337</sup>

## VI. CONCLUSION

Each nation reviewed above (the United States, Brazil, Iraq, the United Kingdom, Estonia, Italy, India, and Yemen) balances its voting system's accessibility, security, and reliability according to the differing social, economic, and cultural conditions that it faces. This has produced a wide range of balloting and tabulation processes, some of which are turning out to be superior to others.

These processes generally share the common goal of accuracy, and differ (as they must, given the differing social, cultural, economic, and geographical circumstances of each country) in the ways they balance the central principles of the balloting and tabulation processes:

332. *The Use of a Photo Roll*, *supra* note 323 (stating that voter impersonation is reduced by “three key identification elements . . . : (1) the photo of the voter on the voters' card; (2) the face of the person reporting to vote; and (3) the photo of the same person on the voters' register.”).

333. IFES, POST-ELECTION REPORT ON THE 2006 PRESIDENTIAL AND LOCAL COUNCIL ELECTIONS IN YEMEN 11 (2006), *available at* <http://www.ifes.org/publication/be266fe0d59797a237434815ab984a64/FINAL%20ENG%20IFES%20Report%20on%202006%20elections.pdf>.

334. The General Elections and Referendum Law, Art. 13(b) (2001), *available at* <http://www.scer.org.ye/english/generalelectionslaw.htm>.

335. See *The Use of a Photo Roll*, *supra* note 323 (“Photographic voters' lists successfully addressed—once for all—the “impersonation plague.”).

336. Harris, *supra* note 329.

337. *The Use of a Photo Roll*, *supra* note 323.

- Accessibility
- Convenience
- Efficiency
- Accommodation
- Security
- Before, during, and after voters mark their ballots
- Reliability
- Workable and manageable in practice given that nation's levels of technological, administrative, and financial resources

Nations adopting new or revised election systems would do well to draw on the experiences of the countries summarized above in designing and implementing their reforms. As these examples illustrate, it is not always possible to maximize simultaneously the accessibility, security, and reliability of a given election system, and many of the specific features of the latest election reforms advance one principle of balloting systems at the expense of another—the way voting by mail, for example, greatly improves the convenience and accessibility of the voting process while at least arguably compromising the security of the same process.

Nevertheless, the breadth of experimentation being undertaken around the globe in the pursuit of these goals thus helps advance the adoption of better, more accurate balloting systems for everyone. As some of these efforts fail, and others succeed, election administrators worldwide are learning from the failures and mimicking the successes. This helps encourage the adoption of voting systems that do a better job combating the forces that can distort voters' intent through coercion, fraud, administrative complexity, or simple human error. To the extent that distortion is reduced and voters' collective intent is converted accurately into election outcomes, these new voting processes can help broadly reinforce government accountability and legitimacy worldwide.

