

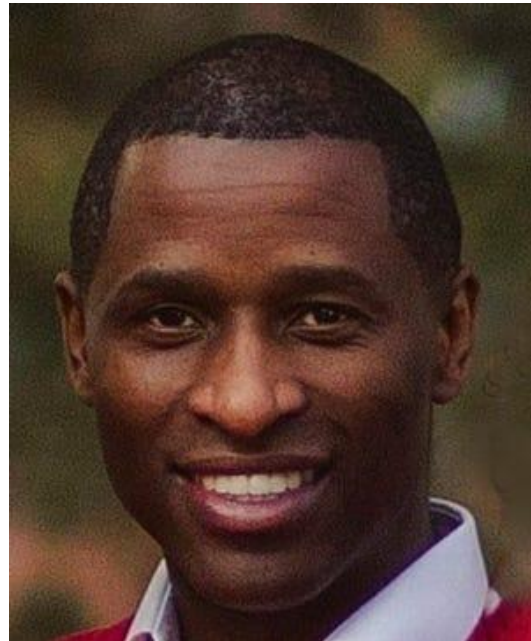
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Hand-marked Paper Ballots: How this Tried-and-True Method Makes Us More Secure

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In 2016, Facebook CEO Mark Zuckerberg shared a photo on Instagram (owned by Facebook) to celebrate Instagram's historic milestone of reaching 500 million users. Though Zuckerberg was excited to share his company's success, headlines instead focused on the unintended revelation that his laptop's webcam and mic were covered with tape. As one of the greatest high-tech inventors, he knows the dangers of modern technology and reveals his simple low-tech method of protection from hackers. One thing is clear, he doesn't blindly trust technology, and neither should you.



Benny J. Smith *Submitted*

We've blindly trusted voting technology until it recently came under intense scrutiny. Many technologists, concerned citizens and others now want to replace voting machines with hand-marked paper ballots to record our votes. Combined with post-election audits, these low-tech methods provide evidence that voters' choices were counted correctly when tabulated.

If you think about it, paper marked by a human is immune to any virus since no computer is involved. It's your starting line in an election, with its most important fact (true voter intent) undeniably created by you. Your available choices and who you chose are both verifiable and documented. Voters unable to mark a ballot by hand will need ballot-marking device choices.

Voting machines are computers, much like the ones we scan regularly for viruses and scream at when the software crashes. There is no camera or mic to tape over, but like any other computer, they are subject to errors and hacking.

For more than a decade, Shelby County has used unsecure touch screens that have frustrated voters with similar episodes of votes flipping from one candidate to another. Using the same version of our equipment, Professor J. Alex Halderman hacked a machine to make his students elect their archrival, and I've created software to devastate central tabulators. Though we are two individuals with skills and proof that elections can be hacked, countries like Russia, China and Iran have programmers equally capable of altering our actual elections.

In horse racing, photo finishes provide indisputable evidence of the true winner. Vote tabulation is our finish line, and like horse racing, we need similar evidence that computers counted correctly. Shelby County equipment malfunctioned in 2015, and has neither start nor finish lines that can be audited. A Georgia federal judge weighed in by barring the use of its paperless voting systems after 2019.

Our equipment seemed "modern" when they were purchased but they were not. They were delivered with outdated hardware, error prone and difficult to secure. Trendy new ballot-marking devices (BMDs) are proliferating across the country and following the same pattern. Dubbed the "five-thousand-dollar pencil", many use an outdated version of windows and can carry viruses through its bar-codes (a core function unverifiable by voters). They are also capable of printing votes on the printouts after they are cast. Some versions print and tabulate, potentially allowing them to be programmed to print altered results without the voters' knowledge or consent.

Recently, Colorado became the first state to ban bar-codes and are having existing equipment re-engineered to mimic hand-marked paper ballots.

Gilford County, North Carolina, engaged in spirited discussions with a well-informed coalition that included Lynn Bernstein, John Brakey and Dr.T. Anthony Spearman, who notably said “I read a little Hebrew. I read a little Greek. I read a little Spanish. But I don’t read bar codes, and the bar codes are the issue at hand.”

After weighing security and cost savings, they selected hand-marked paper ballots.

Paper can reduce long lines, is more secure and also cheaper. The University of Pittsburgh and OSET institute estimate BMD options to be twice as expensive. However, VoterGA settles all debates using actual vendor estimates. In the state of Georgia:

- Hand-marked paper ballots would cost \$22 million.
- Ballot-marking device options would cost \$99 million.

We need a new system of counting votes, but let’s not jump out of the frying pan into the fire.

Special counsel Robert Mueller advised that election security “deserves the attention of every American.” Software developers, college professors, journalists, cyber security professionals and others say replace blind trust with a transparent, traceable and publicly verifiable system. Barcodes are neither, test yourself with this custom Barcode Challenge and see.

Time is short: Let’s choose evidence instead of confidence. Shelby County is (rightly) determined to get new voting machines in place for the 2020 elections. We should decline ballot-marking devices and purchase a hand-marked paper ballot system. Since the County Commission will fund most of this purchase, they should be deliberate and insist that the Election Commission is too. We have a rare opportunity to address election security and avoid wasting tax dollars in the process.

If you agree, contact both County Commissioners and Election Commissioners and express your support. It’s not too late to save money and democracy, in Shelby County.

Bennie Smith is on the Shelby County Election Commission, and the technical advisory team of SMART Elections. His election research on election security has received national recognition from Bloomberg to Capitol Hill. You can follow him on Twitter: @benniejsmith

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