Paradigm Lost: The Death of the Manual Recount

Scott O. Konopasek*

Electronic voting represents a paradigm shift from this country's recent history of voting on paper ballots rendering most of the assumptions underlying recounts moot. By definition there is no such thing as a "meaningful recount" on electronic voting machines based upon the historical use of the term in paper based voting systems. The electronic paradigm has new assumptions that come into play and must be factored into any reasonable discussion of recounts of electronic votes if such exercises are to accomplish the implied, but poorly understood, objectives of a recount.

First of all a recount is a "means" not an "end". Today's rhetoric about "meaningful recounts" and electronic voting machines is rooted in recounting as an "end" in and of itself. Nothing could be further from reality. A recount is a "means" of verifying that votes were accurately counted and reported as recorded by the voter. The "end" or objective of all elections, regardless of the voting technology employed, is to have accurate, error-free election results. A "means" of achieving this "end" in a paper ballot paradigm is to recount votes recorded by the voter on the ballot. This type of recount takes several forms; a manual count or a machine count and the scope can be comprehensive (100%) of the ballots or a sample (<100%). The type and scope are determined by any number of factors and each has their own value. One type of recount of a specific scope is not inherently more valuable than another when one remembers that the recount is not the "end" but only the "means" to have confidence in the accuracy of the returns.

Hand Counted Ballots

The second important point is an understanding of why a recount of paper based ballots is a reasonable "means" of achieving the "end". In the case of hand counted paper ballots, the obvious reasoning is that humans make mistakes in counting and adding. Certainly, this is the case and recounting to

---

* Scott O. Konopasek is the Registrar of Voters for San Bernardino County California - the largest county in the United States. He has twice led the successful implementation of electronic voting in counties in California and Washington. Mr. Konopasek has served as an election administrator for more than ten years and in three states. Prior to his election administration career, he served 15 years as an Army Counter-intelligence/Counter-terrorism officer. He has a Master of Arts in Political Science and is a member of the American Political Science Association and the Election Center Task Force on Election Reform. He serves on the Institute of Electrical and Electronics Engineers (IEEE) Voting Equipment Standards Committee and was instrumental in drafting the Help America Vote Act.

verify vote totals is a reasonable, but not foolproof, "means" of verifying the accuracy of reported totals. Also, recounting serves an auditing function as well in as much as the recount verifies that the number of ballots counted is correct. In other words, the audit determines that no ballots were counted more than once and that all eligible ballots were actually counted. History shows that this is the cause of most large discrepancies discovered during a recount.

There is an additional function performed, sometimes unconsciously, during such a recount, which is equally important. This is the recognition and translation of the mark made by the voter and making an accurate and consistent determination of the voter's intent. While most voter's mark their ballots correctly (correct meaning that there is no ambiguity of intent), situations routinely arise in which the intent of the voter is not clear. This interpretation of the intent of the voter is a part of the counting and recounting process that cannot be avoided and, when human beings make this interpretation, the interpretations can easily be subjective and/or inconsistent.

Therefore, manual recounts in a hand counted paper paradigm are reasonable "means" of assuring an accurate election in as much as the recount verifies the mechanics of counting and adding, ensuring all ballots are accounted for as well as reviewing and reinterpreting voter intent decisions made in the original count.

Machine Counted Paper Ballots

In the case of machine counted paper ballots, whether recounted by manually or by machine, the reasons for conducting a recount parallel those for recounting hand counted ballots but with an important difference. There is little doubt that machines count accurately and are able to consistently arrive at the same outputs given the same inputs. The ability of machines to add numbers reliably is also without question.

The need to recount machine counted ballots is not to catch human counting or adding errors as with hand counted ballots but rather is found in the old computer maxim GIGO, meaning "Garbage In, Garbage Out." Machine operators must accurately run ballots through a machine if accurate results are expected to be reported by the machine. Through the process of conducting a recount the ballots are audited and accounted for and, as in the case of hand counted ballots, large discrepancies are often found and corrected due to ballots being counted more than once or not at all. Obviously, if the inputs are wrong the output will be as well.

The last reason for recounting machine counted ballots lies in the translation of the marks of the voter on the paper into digital representations of the voters' intent, which is also sometimes a GIGO situation. Hanging chads are

the archetypal example of this phenomenon of machine logic and operating parameters not being able to accurately capture the voters' inputs. Another classic example using optical technology that relies almost exclusively on infrared light is when the voter marks the ballot with red ink making the marks invisible to the machine but leaving clear evidence of voter intent to the human eye. Just like with hand counted ballots, recount procedures consisting of a ballot audit, physical inspection of ballots to ensure an accurate translation of voter intent and a recount, either by machine or by hand, are reasonable "means" of achieving the "end" of an accurate election.

The Paradigm Shift

The evolution of voting technology is as inevitable as the other technological innovations of the late 20th and early 21st centuries. And like other situations involving a sudden change of technology, there is a lag in understanding of the implications of such change. In fact one of the greatest mistakes that is made over and over again as new technology is fielded, is a desire to continue to do things the "old way." This is true regardless of the type of change and occurs in both the public and private sectors. This desire is terribly compelling even when an individual or organization has a clear understanding that the constraints and limitations of the past need no longer apply. Sometimes the ways of the past continue to be observed because tasks are performed without a thorough understanding of the underlying purpose of the tasks.

A favorite story to illustrate this point has to do with cooking a ham. A young woman was preparing the traditional Sunday ham the way she had been meticulously taught by her mother. She unwrapped the ham and, with a large knife, cut off a large portion at one end, then placed the ham in a pan to be warmed in the oven. After years of preparing hams in this manner, she asked her mother the purpose of cutting off the end of the ham. Her mother was surprised by the question and responded that she did not know why but that she had learned this trick while helping her mother as a girl. After speculating a number of possible reasons, mother and daughter decided to call grandmother and ask her. When asked why grandmother always used to cut off the end of the ham before warming it, she replied "When I was younger, the only pan I had to heat the ham in was very small. I cut off the end of the ham so it would fit in the pan." The "means" of cutting off the end of the ham was not necessary to achieve the "end" of making the ham fit in the pan and the process arguably produced inferior results.

Attempting to perpetuate recounts in an electronic voting paradigm as a "means" to achieve the "end" of accurate, error-free election results is like insisting that the ham cannot be heated unless one end is removed. The reasoning and logic of the original "means" to the "end" no longer is relevant.

To insist on having paper ballots produced on electronic voting machines for the sole purpose of recounting them is to value the "means" to the exclusion of the "end".

However, in the new paradigm, there are other "means" to achieve the "end" of accurate and error free elections. The characteristics of Direct Recording Electronic (DRE) voting systems reduce or eliminate the risk of many of the errors that can occur in counting paper-based ballots yet, in doing so, introduce new risks. As a result, recounts become moot as the types of errors and issues they are designed to catch and remedy do not exist with the new voting technology and new types of errors and issues go unaddressed.

In the new paradigm, recounts must be replaced by audits as the "means" of ensuring confidence in the election returns. Unfortunately, laws and regulations are still primarily written for the old paradigm so little has been written and codified to outline adequate auditing techniques. However, many election officials have developed thoughtful and comprehensive auditing models whose effectiveness have been underrated because of a desire by some politicians, academics and activists to cling to the old notion of recounts.

Audits of Electronic Voting Systems

The purpose of this discussion is not to develop detailed auditing protocols for DREs although they are needed. The intent is to point out the irrelevance of paper recount models and assumptions as a means of ensuring the accuracy of electronic election returns. The goal is to shift the current debate from methodologies to provide a “meaningful recount” to a more constructive and scientifically sound discussion of how to accurately audit election returns without relying exclusively on paper recount methodologies.

As opposed to recounts, which can only be conducted after the fact, effective auditing models for DREs begin well prior to the election as the ballots are programmed and the machines tested. This auditing continues through the certification of the election and provides confidence at each step along the way. The primary risk to DREs that effective audits will detect and correct are human errors in setting up and programming the machines. Errors such as omitting a candidate or an office, assigning wrong ballots to precincts, mislabeling or mistyping important information are errors that can occur in both paper and electronic systems. The frequency and magnitude of these type of errors, however, is much greater in DREs than in paper based systems. Recount processes cannot detect or mitigate these situations whereas auditing can and must.

Another highly publicized risk to DREs is the malicious and deliberate attack on the software. While the possibility of such an attack actually occurring,

let alone succeeding, is subject to much heated debate; the potential remains none the less. An effective audit protocol will provide a means of denying and detecting such attacks. A contemporaneous paper audit record may be a means of detecting but not preventing such an attack. Other non-paper audit tools currently exist as well to perform the same task. Parallel testing has been used with success as well to detect malicious attacks. Without stipulating a specific methodology, it can be agreed that this type of risk must be addressed in a comprehensive auditing model.

A comprehensive audit protocol will also be centered on the physical security and access controls employed to protect DRE systems from damage or tampering in storage and in the field. Assuring the integrity of each individual machine at each step of the way is a "means" of ensuring the accuracy of the election, the “end”.

Conclusion

The “means” of validating the accuracy and integrity of modern elections conducted on DRE technology is not found in replicating recount processes that are only effective with paper based voting systems. The electronic paradigm has new assumptions that if left unaddressed while pursuing “meaningful recounts”, will result in greater chaos, ambiguity and uncertainty of election returns. The pursuit of recounts as an “end” in and of itself is a fruitless endeavor.

Auditing protocols that ensure the accuracy of the DRE ballots, that provide a means of ensuring that votes are recorded and reported as intended by the voter and that safeguard the voting equipment are the "means" in the new paradigm to the "end", validating the accuracy of an election. Manual or machine recounts of paper facsimiles of electronic ballots are only a meaningless repetition of a formerly meaningful act.