

TEN REASONS FOR BANNING INDIAN EVMs

By GVL Narasimha Rao*

Electronic voting machines (EVMs) were introduced in a limited way in Indian elections in 1982, and they have been in universal use since the general elections of 2004, when paper ballots were phased out completely. It is about time India reformed its voting system to ensure that the electoral verdicts reflect the true will of the people of the country.

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1. The Whole World has Discarded Similar EVMs

The electronic voting machines used in Indian elections are internationally known as Direct Recording Electronic (DRE) voting machines which record votes directly in electronic memory. Similar voting machines have been banned in many countries such as Germany, the Netherlands, Irelands etc. and such machines are allowed in most states of the US only with a paper back up. Potential dangers of "vote fraud" and more importantly, lack of transparency and verifiability associated with them prompted ban or restrictions of their use.

Developed nations like the United Kingdom and France and advanced countries in our region like Japan and Singapore have so far stuck to voting on paper ballots, owing to their simplicity, verifiability and voter confidence in the system.

India is an exception to this international trend and we continue to use these voting machines long discarded by the world due to lack of awareness and appreciation of the lay public of the concerns.

2. Use of EVMs is Unconstitutional and Illegal Too!

Indian EVMs may also be held unconstitutional because they infringe upon the fundamental rights of the voters. In India, Right to vote is a legal right but how that vote should be exercised by a voter is his/ her individual expression covered by Article 19 (1) (a) of the Constitution, which guarantees fundamental rights to the citizens. In the 2002 case pertaining to disclosure of assets and the criminal background of candidates, the Supreme Court ruled that voters have a right to know the antecedents of the contesting candidates and this is fundamental and basic for survival of democracy.

Accordingly, a voter has the right to know that his vote which he exercised as a part of freedom of expression has really gone in favour of the candidate whom he/she has chosen. This right, fundamental in nature, is absent in the electronic voting system. In the traditional paper ballot system, that fundamental right was preserved because a voter knew exactly how his/ her vote was recorded and counted.

Universal use of EVMs in Indian elections is illegal too! In 1984, the Supreme Court of India held that the use of electronic voting machines in elections was “illegal” as the Representation of People (RP) Act, 1951 did not permit use of voting machines in elections. Later, the R.P. Act was amended in 1989 incorporating Section 61A. However, the amendment says voting machines “*may be adopted in such constituency or constituencies as the Election Commission may, having regard to the circumstances of each case, specify.*”

Violating the provisions of the R.P Act, the Election Commission has conducted 2004 and 2009 nationwide general elections only using electronic voting machines. Going by the 1984 judgment of the Supreme Court, parliamentary elections of 2004 and 2009 may be held illegal.

3. EVM Software Isn't Safe

The electronic voting machines are safe and secure only if the source code used in the EVMs is genuine. Shockingly, the EVM manufacturers, the BEL and ECIL, have shared the ‘*top secret*’ EVM software program with two foreign companies, Microchip (USA) and Renesas (Japan) to copy it onto microcontrollers used in EVMs. This process could have been done securely in-house by the Indian manufacturers.

Worse, when the foreign companies deliver microcontrollers fused with software code to the EVM manufacturers, the EVM manufacturers cannot “*read back*” their contents as they are either OTP-ROM or masked chips.

Amusingly, the software given to foreign companies is not even made available with the Election Commission, ostensibly for security reasons. With such

ridiculous decisions, the Election Commission and the public sector manufacturers have rendered security of the EVMs a mockery.

Adopting an open standards policy by making the software public and allowing parties to test the software installed in the EVMs would have offered better protection.

4.Nor is The Hardware

The danger for EVM manipulations is not just from its software. Even the hardware isn't safe. Dr. Alex Halderman, professor of computer science in the University of Michigan says, "*EVMs used in the West require software attacks as they are sophisticated voting machines and their hardware cannot be replaced cheaply. In contrast, the Indian EVMs can easily be replaced either in part or as wholesale units.*"

One crucial part that can be faked is microcontrollers used in the EVMs in which the software is copied. EVM manufacturers have greatly facilitated fraud by using generic microcontrollers rather than more secure ASIC or FPGA microcontrollers.

Not just only microcontrollers, mother boards (cards which contain microcontrollers) and entire EVMs can be replaced. Neither the Election Commission nor the manufacturers have undertaken any hardware or software audit till date. As a result, such manipulation attempts would go undetected.

To detect such fraud, the upgraded EVMs have a provision to interface with an *Authentication Unit* that would allow the manufacturers to verify whether the EVM being used in the election is the same that they have supplied to the Election Commission. ***The EVM manufacturers developed an "Authentication Unit" engaging the services of SecureSpin, a Bangalore based software services firm. The Unit was developed and tested in 2006 but when the project was ready for implementation, the project was mysteriously shelved at the instance of the Election Commission. Several questions posed to the Election Commission for taking this decision went unanswered.***

5. EVMs are Sitting Ducks

The Indian EVMs can be hacked both before and after elections to alter election results. Apart from manipulating the EVM software and replacing many hardware parts discussed above, discussions with knowledgeable sources revealed that Indian EVMs can be hacked in many ways. I mention just two of them below.

Each EVM contains two EEPROMs inside the Control Unit in which the voting data is stored. They are completely unsecured and the data inside EEPROMs

can be manipulated from an external source. It is very easy to read (data from) the EEPROMs and manipulate them.

The second and the most deadly way to hack Indian EVMs is by inserting a chip with Trojan inside the display section of the Control unit. This requires access to the EVM for just two minutes and these replacement units can be made for a few hundred rupees. Bypassing completely all inbuilt securities, this chip would manipulate the results and give out “fixed” results on the EVM screen. The Election Commission is completely oblivious to such possibilities. A demonstration of these vulnerabilities is on the cards.

6. “Insider” Fraud a Concern

Personal accounts from some well placed political sources and experts say that there are some “insiders” demanding vast sums (Rs. 5 Crore for each assembly constituency) to fix election results. Who are these insiders? Unlike in the traditional ballot system where only the election officials were the “insiders”, electronic voting machine regime has spawned a long chain of insiders, all of whom are outside the ambit and control of the Election Commission of India.

There is every possibility that some of these “insiders” are involved in murky activities in fixing elections. The whole world—except us in India—is alive to the dangers of insider fraud in elections.

The “insiders” include the public sector manufacturers of India’s electronic voting machines namely, the Bharat Electronics Limited (BEL) and Electronics Corporation of India (ECIL), the foreign companies supplying microcontrollers, private players (some of which are allegedly owned by some political leaders) for carrying out checking and maintenance of electronic voting machines during elections.

7. Storage and Counting are Concerns

The EVMs are stored at the district headquarters or in a decentralized manner in different locations. Election Commission’s concern for EVM safety becomes apparent only during elections, where as security experts say that voting machines must remain in a secure environment throughout their life cycle.

There could be many malpractices associated with electronic counting. “Everybody watches polling closely. Nobody watches counting as closely),” says Bev Harris, an American activist.

Our Election Commission takes three months to conduct parliamentary elections but wants counting to be over in just three hours! In the rush to declare results

and the winners, several serious lapses go unnoticed in the counting process. As a result, parties cannot give it the kind of attention that this activity deserves. Massive discrepancies between votes polled and counted in a large number of polling stations across the country raise serious concerns in this regard.

8. Vote of No Confidence

The political class cutting across all sides of the divide has just one verdict: “**we don’t trust the EVMs**”. This vote of “no confidence” stems from the personal experiences of parties and leaders as well as the nature of results thrown up by the EVMs. Parties are looking at EVMs with great suspicion and dread the prospect of EVMs “defeating” them. This mistrust in EVMs is not confined to any single party and is all pervasive.

Almost all mainstream political parties, including the BJP, Congress, left parties, regional parties like the Telugu Desam party (TDP), AIADMK, Samajwadi party, Rastriya Lok Dal (RLD), Janata Dal (United) etc. have all expressed reservation about EVMs in the aftermath of 2009 Lok Sabha polls. Even the Congress party that decisively won the 2009 general elections alleged that the EVMs have been manipulated in Orissa.

Today, it is difficult to find parties that vouch for the continued use of EVMs in Indian elections. On the contrary, there is a flood of opposition to the EVMs from the political class.

9. EC is Clueless on Technology

The Election Commission has adopted the EVM technology about which it has practically no knowledge. As a result, it has little control over many aspects of the election process.

None of the election commissioners, neither the present commissioners nor their predecessors, have proper understanding of the EVM technology. The only source of technical understanding for the Election Commission is a Committee of experts led by its chairman, Prof. P.V. Indiresan.

Even the Expert Committee seems very weak in its capacities and understanding. Alex Halderman, professor of computer science at the University of Michigan and an expert on the security of voting systems who was present in New Delhi for the launch of the book, *Democracy at Risk, Can We Trust our EVMS?* commented, “*When I read the 2006 technical report prepared by the Expert Committee of the Election Commission. I scribbled on it that there was a cause for alarm and quickly decided to agree to come here.*”

That speaks volumes for the quality and rigor of security testing done on the Indian EVMs.

10. Trust Deficit

Election Commission's conduct in the wake of the serious reservations expressed by people has been unbecoming of a constitutional body. It has uttered many lies – our EVMs are “tamper proof”, they are “different” etc. etc. It has refused to provide any clarifications sought to the petitioners in the Supreme Court, despite a reference from the Supreme Court of India.

It has taken several questionable decisions for which it has refused to offer any explanations. For instance, it does not explain why old EVMs were used in Lok Sabha elections despite the recommendations of its own Expert Committee. It does not explain why as many as 4.48 Lakh new EVMs (which are more secure as per the Expert Committee) were not used in any Congress party or UPA ruled states? Why and where it had allowed use of state government owned EVMs?

The non-transparent conduct of Election Commission in the use of EVMs and the farce of an “enquiry” it has conducted following serious reservations on EVMs does not inspire confidence in its unbiased functioning.

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