

*The first version of this note was prepared for a presentation at a conference of
“EVM Virodhi Rashtriya Jan Andolan” in Mumbai, on 12th June 2019.
It has subsequently been revised and updated to make it better and clearer.*

My Capacity: An ordinary Citizen of India.

To My Fellow Citizens Of India: This note is addressed TO MY FELLOW CITIZENS OF INDIA WHO ARE DEEPLY CONCERNED ABOUT THE HAVOC WROUGHT ON OUR DEMOCRACY BY THE THINGS CALLED EVMs (Electronic Voting Machines) USED BY THE ECI (Election Commission of India). It is also addressed TO MY FELLOW CITIZENS OF INDIA WHO ARE NOT YET CONCERNED ABOUT THIS PROBLEM, BECAUSE YOUR RIGHTS TO A TRUE DEMOCRACY IN OUR COUNTRY HAVE BEEN TAKEN AWAY WITHOUT YOUR KNOWLEDGE, by these things called EVMs.

My first inkling of this problem with EVMs was many years ago when UPA Government was ruling our country, when I read in some social media that EVMs used in India (and elsewhere in the world) were untrustworthy, and that some Professor / Expert from a western country who had taken a flight to India to discuss this matter with some concerned others in India, was denied entry into our country by the immigration authorities of India, presumably as directed by the Home Ministry of India, and was sent back from the airport itself. I don't remember the details, but it stuck in my mind as to why our Government could be so afraid of someone who might show us that we were compromising our democracy with the use of these EVMs. I was unhappy as well as curious, but like most other ordinary persons, I was so busy with my own day to day life matters and work matters, there was nothing I could do. I knew however that there was something bad happening to India's democracy.

Highly Surprising State Election Results In UP and Punjab in 2017: After the State Assembly elections in UP, Punjab, and Goa were announced, Madam Mayawati of BSP loudly protested alleging EVM manipulations to account for the dismal performance of her party. ECI promptly rejected the allegations the very same day. AAP was also alleging EVM manipulations in Punjab. Four to five (4 to 5) days later, the ECI released press note 28 of 2017, proclaiming and reaffirming the non-manipulability and invulnerability of EVMs in their view. In all that commotion, I also heard about a Supreme Court judgment of 8th October 2013 that had apparently addressed the issue of EVMs.

Prima Facie Fraud Committed By ECI Against The People of India In March 2017, Regarding The Stance Of Indian Judiciary On EVMs: In the background of commotion as above, I studied the Supreme Court judgment of 8th October 2013 and Press Note 28 of 2017 issued by ECI. It was utterly shocking for me to realize that the constitutional authority in India charged with conducting free and fair elections in India, had prima facie made blatant false proclamations on the stance of Indian Judiciary on the matter of EVMs (without paper trail). (It may be noted that 2017 state assembly elections in UP were held essentially without paper trail / VVPATs). Supreme Court in 2013, had clearly said that it was not possible to hold free and fair elections with EVMs without paper trails, and ECI had proclaimed that Indian judiciary had held that EVMs (without paper trail as used in UP) were tamper proof and invulnerable based on various high court judgments of 2001 to 2004. Obviously, the SC judgement of 2013 would overrule and prevail over various High Court judgements of 2001 to 2004. Is this not fraud on the people of the country by ECI, to misrepresent the stance of Indian judiciary as on the date of that press note?

I wrote an “Open Letter” to ECI dated 29th April 2018, asking them to apologize for this prima facie fraud committed by the ECI against the people of India. ECI replied as per their letter dated 21st May 2018, referring me to a publication on their website, which however does not at all address the issue I had raised. Copies of my letter to ECI and their reply to me are attached to this note.

Indiaevm.org: I would strongly urge anyone concerned with EVMs and our democracy, particularly fair minded journalists, to please go to website <https://indiaevm.org>, and study what the website shows and says, with an open mind. There is a six and half minute video which any ordinary person can understand. There is a Press Release dated April 28 2010, that would be good for everyone to read. For those who are interested in a truly in-depth analysis of everything related, there is a technical paper, unedited video, pictures, Qs & As, information on authors, etc. In my opinion, the key contents of this website should also be translated

into all Indian languages, so that ordinary Indians can see and understand. It would enable ordinary Indians to better grasp the gravity of what is happening in our Country with regard to EVMs.

Sri Hari K. Prasad: We cannot talk about EVMs in India without talking about Sri Hari K. Prasad. Hari Prasad from Hyderabad in India, Prof. J Alex Halderman, Professor of Computer Sciences in University of Michigan in Ann Arbor, USA, and an expert on electronic voting security, and Sri Rop Gonggrijp, a technology activist from Holland who was instrumental in getting EVMs banned in Netherlands, are the authors of the contents of indiaevm.org. Hari Prasad played a very key role in exposing the vulnerability of Indian EVMs to fraud, for which the Election Commission of India had him arrested. It is sad, but I am sure that the people of India will more than compensate by showing their true gratitude to him. A report in the Economic Times dated 15th September 2010 titled “The EVM Cracker” would be good to read.

Sri GVL Narasimha Rao: Sri GVL Narasimha Rao, who I understand is presently the national spokesperson for BJP, wrote a book in 2010, when UPA was in power at the Central Government, titled “Democracy At Risk! Can We Trust Our Electronic Voting Machines?” It is a must read for anyone who wants to understand about the history of Indian EVMs. He beautifully describes how our EVMs are highly untrustworthy and should be banned. Alas, after BJP / NDA came to power at the Central Government in India, to the best of my knowledge and belief, he has been silent on the matter.

Dr. Subramanian Swamy: Dr. Subramanian Swamy had filed a Civil Appeal No.9093 of 2013 in the Supreme Court of India, arising out of a SLP (Special Leave Petition) Civil No. 13735 of 2012, against the Election Commission of India. This appeal was heard by the Supreme Court along with a Writ Petition (Civil) No. 406 of 2012 filed by a Rajendra Satyanarayan Gilda, against the Union of India, Chief Election Commissioner etc, regarding the need for a paper trail to be used with EVMs, contending that EVMs without a paper trail could not be trusted. This was a landmark Supreme Court case in India on EVMs. It is noteworthy that both the petitioners asked for a paper trail to be incorporated as part of EVM systems for use in elections, and that they did not ask for banning EVMs altogether in favor of paper ballots only.

Supreme Court Judgment of 8th October 2013: The judgment in the above landmark case was delivered on 8th October 2013. In my opinion, the most important theme of the judgment is expressed in **para 29** which is reproduced below;

“From the materials placed by both sides, we are satisfied that the “paper trail” is an indispensable requirement of free and fair elections. The confidence of the voters in the EVMs can be achieved only with the introduction of the “paper trail”. EVMs with VVPAT system ensure the accuracy of the voting system. With an intent to have fullest transparency in the system and to restore the confidence of the voters, it is necessary to set up EVMs with VVPAT system because vote is nothing but an act of expression which has immense importance in democratic system.”

Essentially, the above para in the judgment, which seems to be the single most important part of the judgement, says that;

- a. Without “paper trail”, free and fair elections are not possible. It will be lacking an “indispensable requirement”.
- b. Without introduction of the “paper trail”, confidence of the voters in the EVMs cannot be achieved.
- c. Confidence of the voters (with EVMs) is lacking and needs to be restored.
- d. “...vote...has immense importance in democratic system”.

Full judgment in the case can be downloaded from the Supreme Court website. This will be helpful to fair minded independent journalists and fair minded non-biased ordinary citizens, to not get confused if and when some people / bodies including the ECI, refer to this judgment in different other ways.

Election Commission of India (ECI) Sits On This Judgment For About Four Years: To my understanding, the primary function of ECI is to hold free and fair elections. The primary responsibility of ECI is to the people of India at large. Nothing else should interfere with this function and this responsibility. Given that the highest body of the Indian Judiciary had held that free and fair elections were not possible

with EVMs without an appropriate paper trail, if I were ECI, I would have immediately stopped holding elections with EVMs without paper trail. It is noteworthy that this judgment did not come out of nowhere. It was the result of many years of continuous struggle on the part of many well meaning citizens / persons, against the stand of ECI with regard to EVMs. If I were ECI, I would have held all subsequent elections with EVMs with VVPATs or with paper ballots without EVMs or a combination of the two depending on on-ground realities. If the Executive branch of GOI (Government of India) were to not cooperate by providing the needed funding and personnel resources, I would have loudly and unambiguously complained about it openly for the whole country to know, including ordinary people of the country at large, to whom I (as ECI) would have my primary responsibility. It is noteworthy in this context that to the best of my knowledge and belief, there was and there is, nothing in the constitution or any court order that would prevent ECI from holding elections with paper ballots without EVMs altogether, if that was/is the best option available at any point in time. Sadly, the real ECI's approach was different.

ECI holds two kinds of General Elections, one for Lok Sabha (National General Elections) and the other for State Assemblies (State General Elections). It also holds Bye-Elections for those Lok Sabha seats and/or for those State Assembly seats that fall vacant at times other than general election times. ECI did not use VVPATs routinely, barring a tiny usage of them here and there on a pilot scale, from October 2013 till late 2017. They conveniently started telling themselves and others in the country, that they were not required to use VVPATs routinely until 2019 Lok Sabha elections. They also gave excuses like the GOI did not release funds for procuring VVPATs etc, when anybody questioned them. They let down the people of the Country at large. They let down the country's democracy.

Prima Facie Fraud Committed By ECI Against The People Of India At Large: As explained higher up in this note, when Madam Mayawati complained about EVMs after UP State Assembly elections in early 2017, ECI blatantly misrepresented the stance of the Indian Judiciary regarding (paperless) EVMs which were essentially used in those elections. This is clear in their press note 28 of 2017 dated 16th March 2017, and in fact in many other documents put out by ECI from time to time.

Paper Trail Is Useless If There Is No Routine Random Cross Checking Of An Appropriate Number Of EVM – VVPAT Pairs: In a democracy, it is presumed and understood that every citizen's vote must be counted. Paper ballots were the way it was being done before EVMs came along. Some people logically suspected that EVMs could perhaps make the job of recording the votes and counting them, a lot easier compared to using paper ballots. It later became clear to many that EVMs can be tampered and are therefore untrustworthy. With a desire of keeping the convenience of EVMs, paper trails were thought of as a way to hopefully protect the integrity of election process. This paper trail would however have any meaning only if there is routine random cross checking of a certain appropriate number of them with the electronic counts of EVMs. If there is no perfect match, it means that means the electronic counts of EVMs cannot be trusted, and 100% of the VVPAT paper ballots should be counted. Otherwise, it will be useless! Worse, it gives a false sense of security.

Routine Random Cross Checking of One (1) EVM-VVPAT Pair Per Assembly Constituency / Assembly Segment, Is A Cruel Joke On The People Of The Country: This is what the ECI had started doing from approximately late 2017 when it decided to use VVPATs with all EVMs for all elections from that point onwards. Figures pertaining to the total futility of this practice, were submitted as part of my petition to the SC in a PIL (Public Interest Litigation) recently. These are elaborated further below.

Routine Random Cross Checking of Five (5) EVM-VVPAT Pairs per Assembly Constituency / Assembly Segment, is Also Very Grossly And Severely Insufficient To Ensure Integrity of Election Process Using EVMs with VVPATs: Besides my petition in the SC requesting 50% routine random cross checking of all EVM-VVPAT pairs, there were two other petitions in the SC, one by some retired civil servants asking for 30% routine random cross checking, and one by 21 (twenty one) political parties asking for 50% routine random cross checking. The Supreme Court disposed off all of the three petitions on 8th April 2019 by directing the ECI to routinely randomly cross check five EVM-VVPAT pairs per assembly constituency / assembly segment.

My Petitions In The Supreme Court of India:

When I say “my petitions”, I mean I was “the petitioner” in the cases. In reality, although I played a central role in filing my petitions, the totality of the petitions themselves, was the result of direct and indirect contributions of a large number of people in so many different ways, for which I am grateful. My Advocates, several Professors of Mathematics, and many others, have played very important roles. Without all that help, it would not have been possible.

ECI's Decision To Cross Check One Random EVM-VVPAT Pair Per Assembly Constituency / Assembly Segment: The ECI, after sitting on the concept of VVPATs for about four years without meaningfully implementing it, under various pressures from different people in the country, they finally decided to have VVPATs connected to all EVMs for general elections from about the end of 2017. Under pressure again to do routine random cross checking of VVPAT counts with electronic counts of EVMs, they decided they will do such cross checks in one EVM-VVPAT pair per assembly constituency at random, that too after the electronic counts were completed and made known to the public. At that point in time, they gave no scientific rationale for such a decision, and they did not invite scientifically based suggestions from the public at large either.

ECI Experts' Opinion: While many people were aghast at such a seemingly useless and arbitrary decision, a group of retired civil servants vigorously pursued with the ECI demanding a much higher percentage of routine random cross checking. ECI then had two of their select experts in Statistics, Dr. Abhay G. Bhatt of Indian Statistical Institute, Delhi Center, and Dr. Rajeeva L. Karandikar of Chennai Mathematical Institute, Chennai, make a presentation dated 24th August 2018, concluding (erroneously as I understand now) that cross checking a total of 479 (four hundred and seventy nine) EVM-VVPAT pairs at random out of about one million plus EVM-VVPAT pairs that would be used all over the country, would be sufficient to ensure integrity of election process using EVMs. ECI took this as a certificate from the two experts that ECI which had a policy of cross checking one EVM-VVPAT pair per assembly constituency / assembly segment, was in fact cross checking a lot more than 479, and on that basis, told the retired civil servants that nothing would be changed. The problem with the presentation of the above two experts was and is, that they use many statistical symbols, formulae, concepts and terms that non-mathematicians cannot understand. This handicaps ordinary citizens of our country in being able to make an independent reason – logic based judgment on whether what the experts said was correct and relevant to the situation in question, and whether or not the ECI was correct in its stand.

Devasahayam Petition In SC With Counter Expert's Opinion: Faced with a dead end from ECI and being deeply dissatisfied with ECI's stand, the group of retired civil servants got the opinion of another expert Dr. Swaraj Kumar Nath (Dr. S.K. Nath), retired Director General of Central Statistical Organization, under the Ministry of Statistics and Program Implementation, Government of India. His opinion was quite different from the ECI experts' opinion. His opinion was that a much, much higher percentage of routine random cross checking would be required. ECI was not moved. Based on Dr. Nath's paper, Sri Devasahayam and two other retired civil servants filed a petition in the Supreme Court (WP (C) No.001514 / 2018, Diary No. 44914/2018, filed on 21st December 2018), asking for 30% routine random cross checking of all EVM-VVPAT pairs. Certainly, Dr. Nath's opinion was very, very different from that of ECI experts Dr. Abhay G. Bhatt and Dr. Rajeeva L. Karandikar. It appears that ECI's experts had misapplied some statistical formulae for the situation at hand. From my standpoint, the problem with Dr. Nath's paper also, was that it uses statistical symbols, formulae, terms and concepts that non-mathematicians will not readily understand.

Petition By 21 (Twenty One) Political Parties In SC, Led By Sri N. Chandrababu Naidu: This petition in the Supreme Court (WP (C) No.000273 / 2019, Diary No. 7680 / 2018 was filed on 2nd March 2019, wherein the twenty one (21) political parties asked for 50% routine random cross checking of all EVM – VVPAT pairs, to ensure integrity of election process with regard to EVMs. Like in many other petitions in recent months and years, the petitioners in this case did not provide any scientific mathematical backing for their request except to say that cross checking one (1) EVM – VVPAT pair was too small and statistically insignificant.

Distinctive Features In My Petition: My petition in the Supreme Court (WP (C) No. 215 / 2019, Diary No. 6345 – 2019, filed on 18th February 2019) had prayed for 50% routine random cross checking of all EVM – VVPAT pairs, and it had a solid mathematical backing using the very simple principle of probability,

besides, addition, subtraction, multiplication and division, which any person who has passed 10th Standard mathematics with first class (60%) marks would have no problem following and understanding. Given that it involved thousands of calculations, it also needed elementary familiarity with use of Excel Spreadsheet tables, which any high school student can easily learn if not knowing already. It included no specialized statistical symbols, terms, formulae, and concepts, and is readily understandable by non-mathematicians. The logic was compelling for 50% routine random cross checking. Further, the concepts and calculations were independently certified as being mathematically correct, by three different Professors of Mathematics – a Professor of Mathematics in Indian Institute of Science, Bangalore, an Asst. Professor of Mathematics in Punjab University, Chandigarh, and an Emeritus Professor of Mathematics in Ohio State University, Mansfield Campus, Ohio, USA.

Basic Principle of Probability: If you can imagine a dice with six sides, with numbers 1,2,3,4,5, and 6 written on the six sides respectively, and if you roll the dice at random, the probability that an odd number will be facing up, will be = 50% (The dice has six sides, with three odd numbered sides and three even numbered sides). Similarly, if you can imagine four small identical balls with the numbers 1,2,3, and 4 written on them respectively, if the four balls are put in an opaque bag, and one ball is picked up at random from the bag, the probability that number 3 (three) will be on that ball, will be = 25% (one in four). The principle used was that simple.

Illustrative Calculations Using Probability Principle: In an Assembly Constituency with 200 booths, let us assume that each booth has one EVM-VVPAT pair (Electronic Voting Machine paired with a Voter Verifiable Paper Audit Trail machine). That means, there are 200 booths, with 200 EVMs which are attached to 200 VVPATs. Assuming that 1% of the EVMs in the constituency, are tampered, that is, 2 booths are tampered, and the other 198 booths are not tampered and not faulty. On checking one VVPAT at random out of the 200 total VVPATs, this will be the first VVPAT at random, to be cross checked. Total EVM-VVPATs are 200, out of which 198 EVMs are not tampered. Therefore, there will be 198/200 probability, that is, 99% probability that a tampered EVM will not be detected, by the first EVM-VVPAT cross checked at random. After cross checking the first EVM-VVPAT at random as above and failing to detect a tampered booth (which will happen 99% of the time as above), there would be 199 EVM-VVPAT pairs remaining, out of which two tampered EVMs are still there and the other 197 EVMs are not tampered. On checking a second EVM-VVPAT at random under the above circumstances, the probability that this second EVM-VVPAT at random will fail to detect a tampered EVM, will be = $197/199 = 0.989949749 = 98.9949749\% =$ approximately 98.99%. The probability of the 1st random EVM-VVPAT alone failing to detect tampering will be 99%. Probability of 2nd random EVM-VVPAT alone failing to detect tampering will be 98.9949749%. To calculate the combined probability of the 1st and 2nd random EVM-VVPATs, both together failing to detect a tampered EVM, we have to multiply the two individual probabilities. Thus, the combined probability of both the 1st and 2nd random EVM-VVPATs together failing to detect a tampered EVM, will be = $99\% * 98.9949749\% = 98.0050251\% =$ approximately 98.01%.

On repeating the calculations along the above lines for the 3rd random VVPAT cross check, the probability of its own individual failure to detect tampering, will be 98.989899%, and the probability of combined failure (or cumulative failure) of 1st, 2nd, and 3rd random EVM-VVPAT cross checks, will be 97.0150754%. As can be seen from above, the combined failure (or cumulative failure) was about 98.01% with two random EVM-VVPAT cross checks, and it is down to about 97.02% with three random EVM-VVPAT cross checks. Same way, with each additional random cross check, the probability of a cumulative failure of them to detect a tampered EVM, keeps going down. On repeating the calculations until we come to 194th random VVPAT cross check, the probability of cumulative failure of 1st through 194th random VVPAT cross checks to detect a tampered EVM, will be 0.08%. In other words, the cumulative probability of successfully detecting a tampered EVM will be = $(100\% - 0.08\%) = 99.92\%$ or approximately 99.9%. Stated another way, in order to detect a tampered EVM with 99.9% probability, we will need to cross check a total of 194 EVM-VVPATs at random, out of the total of 200 EVM-VVPATs in the constituency. That is equal to $(194/200) = 97\%$ of all EVM-VVPATs in the constituency. Stated yet another way, 97% of all EVM-VVPATs in the constituency need to be cross checked at random, and be found to show a perfect match, in order to exclude presence of tampering of 1% of EVMs in a constituency of 200 booths, with 99.9% probability.

Probability of Non-Detection of Any Tampered EVM If a single EVM – VVPAT Pair Is Randomly Cross Checked As Was ECI's Practice: Assuming the average number of voting booths in an assembly

constituency to be about 250, and assuming that there was a true randomization in EVM – VVPAT cross checking;

- a. If one EVM in a single booth has been actually manipulated out of 250 booths, then the chance (probability) that the manipulated EVM – VVPAT pair will be picked up for cross checking, will be = $(1/250) = 0.4\%$. Looked at another way, there is a 99.6% chance (probability) that the manipulated EVM will not be picked up for VVPAT cross checking.
- b. If ten (10) EVMs have been manipulated in a constituency of 250 booths (250 EVMs), and then if a single VVPAT is chosen at random for cross checking, the chance (probability) that any one of those ten tampered EVMs will be chosen for cross checking will be = $(10/250) = 4\%$. Looked at another way, there is a 96% chance (probability) that it will fail to detect any tampering of EVMs.
- c. Similarly, if twenty five (25) EVMs have been tampered in a constituency of 250 booths (250 EVMs), then if a single VVPAT is chosen at random for cross checking, the chance (probability) that any one of those twenty five tampered EVMs will be chosen for cross checking, will be = $(25/250) = 10\%$. Looked at another way, there is a 90% chance (probability) that it will fail to detect any tampering of EVMs.
- d. Similarly, if fifty (50) EVMs have been tampered in a constituency of 250 booths (250 EVMs), then if a single VVPAT is chosen at random for cross checking as per ECI's then existing policy, the chance (probability) that one of those fifty tampered EVMs will be chosen for cross checking, will be = $(50/250) = 20\%$. Looked at another way, there is an 80% chance (probability) that it will fail to detect any tampering of EVMs.
- e. Similarly, if a hundred (100) EVMs have been tampered in a constituency of 250 booths (250 EVMs), then if a single VVPAT is chosen at random for cross checking as per ECI's then existing policy, the chance (probability) that one of those hundred tampered EVMs will be chosen for cross checking, will be = $(100/250) = 40\%$. Looked at another way, there is a 60% chance (probability) that it will fail to detect any tampering of EVMs.
- f. ***In summary, the ECI's policy till recently, of cross checking a single VVPAT in each state assembly constituency, or in that segment of a parliamentary constituency, at random, was hopelessly unsatisfactory!***
- g. ***Further, If the randomization is itself faulty or is manipulated to exclude the tampered EVMs from being picked up for cross checking, then the chances of such tampered EVMS going undetected, was practically 100%.***

All of the above data was submitted as part of my petition to the Supreme Court.

It is noteworthy that this is how ECI conducted elections in our country, even after VVPATs were introduced with all EVMs starting in late 2017, till the Supreme Court order of 8th April 2019.

Using The Principle Of Probability, Percentage of EVM – VVPAT Pairs That Will Need To Be Routinely Randomly Cross Checked, To Detect Any Tampering of EVMs With 99.9% Probability, Even When There Are Ten Tampered EVMs In The Constituency: They are as below;

- A. If there are ten (10) tampered EVMs in a Constituency, with a total of 200 booths to 300 booths, as is typical in a state assembly constituency, 49% of all EVM – VVPAT pairs will need to be routinely randomly cross checked, to detect even a single tampered EVM with 99.9% probability.
- B. Similarly, if there are ten (10) tampered EVMs in a Constituency, with a total of 1500 booths to 2000 booths, as is typical in a Lok Sabha constituency, 50% of all EVM – VVPAT pairs will need

to be routinely randomly cross checked, to detect even a single tampered EVM with 99.9% probability.

The above data was part of what we submitted in my petition to the Supreme Court, with supporting Excel Sheet Calculations.

Supreme Court Judgment of 8th April 2019 And Disposal Of My Petition: The Court had bundled my petition along with the Devasahayam petition and the petition by twenty one political parties, to be heard together, given that they were all about the same subject matter. The Court heard the lawyers of the petition by twenty one political parties. I was told that as the advocate on my petition began to speak, the Court started dictating the order. The Court directed the ECI to increase the number of routine random cross checking from one (1) per assembly constituency / segment, to five (5) per assembly constituency / segment, and all three petitions were disposed off. To the best of my knowledge and belief, the Court did not study any of our written submissions in my petition, and it did not allow oral presentation by the advocate in my petition either.

Why Did The Court Dispose Off My Petition Without Even Going Through Anything We Submitted?

I don't know. May be because they are so busy. I understand there could be fifty (50) or more cases listed before each Court Hall of the SC on each working day. I understand that all the court halls of SC together have about 700 cases listed each working day. All that would indeed make it very difficult to do justice to petitioners or to the issues that come before the Court. After all, Supreme Court Justices are human beings too! They can't work magic!

Review Petition Filed in SC: Having been deeply saddened by the judgment, in consultation with my lawyers, I filed a review petition (RP (C) No. 001083 / 2019, Diary No. 15758 / 2019 dated 30th April 2019). We submitted additional documents here showing the very gross inadequacy of cross checking five (5) EVM – VVPAT pairs routinely at random, using the principle of probability, again with certification of the correctness of mathematical concepts and calculations involved, by three different professors of Mathematics.

As part of my review petition, we had submitted a number of further **calculations using the principle of probability, in light of the SC direction of 8th April 2019**, asking the ECI to increase the number of routine random cross checking in each Assembly Constituency / Assembly Segment. They are as below;

With five (5) random cross checks in an Assembly Constituency with 200 booths;

- If there are actually ten (10) tampered EVMs, non-detection probability will be 77.17%
- If there are actually nine (9) tampered EVMs, non-detection probability will be 79.25%;
- If there are actually eight (8) tampered EVMs, non-detection probability will be 81.36%;
- If there are actually seven (7) tampered EVMs, non-detection probability will be 83.53%;
- If there are actually six (6) tampered EVMs, non-detection probability will be 85.74%;
- If there are actually five (5) tampered EVMs, non-detection probability will be 87.99%;
- If there are actually four (4) tampered EVMs, non-detection probability will be 90.30%;
- If there are actually three (3) tampered EVMs, non-detection probability will be 92.65%;
- If there are actually two (2) tampered EVMs, non-detection probability will be 95.05%;
- If there is actually one (1) tampered EVM, non-detection probability will be 97.50%;

With five (5) random cross checks in an Assembly Constituency with 300 booths;

- If there are actually ten (10) tampered EVMs, non-detection probability will be 84.31%

With five (5) random cross checks in an Assembly Constituency with 400 booths;

- If there are actually ten (10) tampered EVMs, non-detection probability will be 88.05%

With five (5) random cross checks per Assembly Segment, and a total of thirty (30) Random cross checks in a Parliamentary Constituency with 1500 booths;

- If there are actually ten (10) tampered EVMs, non-detection probability will be 81.66%

With five (5) random cross checks per Assembly Segment, and a total of forty (40) Random cross checks in a Parliamentary Constituency with 2000 booths;

- If there are actually ten (10) tampered EVMs, non-detection probability will be 81.67%.

It is noteworthy that If the randomization and/or cross checking after randomization is/are faulty and/or manipulated, then the chances of such tampered EVMs going undetected, can be practically 100%.

Dismissal Of My Review Petition On 7th May 2019: The Supreme Court dismissed my review petition, along with dismissal of review petitions by Devasahayam and Others, and by twenty one political parties, respectively. The court simply said, they were not inclined to review. To the best of my knowledge and belief, the Court did not go through anything we submitted in the review petition, and no oral submissions were permitted either.

Why Did Supreme Court Dismiss My Review Petition? Perhaps because the Court is so busy with so many cases, that it has no time! This is my best guess.

Let Us Apply The Above Non-Detection Probabilities To Airport Security Systems: These days a lot of people have travelled by flights, and therefore are familiar with security arrangements at airports. If security systems at airports have a non-detection probability 80% to 90% for some persons getting on an airplane with bombs, would that be considered acceptable? The risks of a plane load of people getting killed under such circumstances, will not be considered as acceptable by anybody. ***With fraud prone EVMs what is at risk is not the safety of a mere plane load of people, but the risk is the potential killing of India's democracy, with 130 Crore people, and that too, silently!***

Where Can Ordinary Citizens Go For Justice If The Apex Court Of Our Country Does As Above? If our Country's top court disposes off a PIL (Public Interest Litigation) concerning a matter that is at the very core fabric of integrity of our democracy, without going through materials submitted by the petitioner, and without allowing the petitioner's advocate make any oral presentation, and further, if it dismisses a review petition also without going over the materials submitted, where can ordinary citizens of the country go for justice? How can ordinary citizens ensure protection of a true democracy in our country?

Inexplicable Devotion Of ECI To EVMs And Related Wrong Doings (In My Opinion):

The story of EVMs began in the 1980s. While it is fully understandable that avenues should be explored to make our work better, more cost and time efficient, it should never be forgotten that **technology is supposed to serve people, and people are not there to serve technology**. The primary function of ECI is to hold free and fair elections in the country, which is at the core of our democracy. ECI should have always been open minded and alert to the possibility of any danger that the EVMs could or would pose to the integrity of our elections. If and when EVMs threatened the integrity of our elections, ECI should never have hesitated to reject the EVMs then and there. That is not what they did.

ECI's Wrongdoing With Sri Hari K. Prasad In 2009 – 2010: When Sri Hari K. Prasad and team asked ECI for sample EVMs to test them for vulnerabilities to fraud, they refused to give them / sell them the "genuine" ECI EVMs for such testing purposes. When Sri Hari Prasad and team then made a replica of the ECI EVMs and showed how they could be manipulated, ECI said it was not demonstrated on a "genuine" ECI EVM, and therefore the demonstration was not applicable to ECI EVMs. Under those circumstances, when some well wisher of the country supplied Sri Hari Prasad and team with a "genuine" ECI EVM unofficially obtained from a Mumbai warehouse, and subsequently Sri Hari Prasad and team showed how easily it could be manipulated, ECI had Hari Prasad arrested on charges of "Possession of Stolen Property". ECI further said that because Hari Prasad and team had manipulated the genuine ECI EVM, even if it was to demonstrate their manipulability, it was no longer "genuine" ECI EVM, and therefore the demonstrated manipulation would not count. Is this not illogical on the part of ECI? In fact, ECI has repeatedly been claiming that a genuine ECI EVM has never been shown to be tamperable. Is this not outright falsehood on the part of ECI?

ECI's Wrongful Dismissal Of Demonstration In Delhi Assembly In May 2017: when Delhi MLA Sri Saurabh Bharadwaj demonstrated on a replica of EVM, in Delhi State Assembly, how easily it could be

tampered, again ECI dismissed it as not on a “genuine” ECI EVM. But then, they ECI refused to make available either free, or at cost, a “genuine” ECI EVM for the purposes of demonstrating their tamperability.

ECI’s Farcical Hacking Challenges On EVMs: ECI held two hacking challenges on their EVMs, one around 2010 and another around 2017, which was open to political parties, and came with a lot of highly restrictive conditions, which can be imposed only on ethical people wanting to demonstrate their tamperability, but cannot be reliably enforced on crooked insiders and criminals, who will neither ask for permission to hack, nor will they officially report to ECI and the people of the Country at large, saying that they have manipulated the EVMs. A thief does not ask for permission to steal, and a robber does not ask for permission to rob. Further, a thief does not declare to authorities and to the people of the country that he/she has stolen, and a robber does not declare to authorities and the people of the country that he /she has robbed. Those who wrongfully access and tamper EVMs to steal election results will not go around saying on TV that they have wrongfully accessed and tampered EVMs to steal election results.

Correct Way To Do Hacking Challenges On EVMs (In My Opinion): If ECI really believed or even now if it really believes that the EVMs are not tamperable, the correct thing to do would be to make one or more sample EVMs (“genuine ECI EVMs”) available to any citizen either free, or at cost, to take those EVMs with them, to their homes, their offices, to their laboratories, to their universities, to their friends or experts of any kind, Indian or foreign, to let them open it, study it, and figure out in what all ways if any, the EVMs can be manipulated, and make public the results of such study to the people of India at large, including to the ECI. Such people should be allowed to freely demonstrate to the entire country, all the vulnerabilities of the EVMs. If the ECI so desires, it can then ask for such manipulated EVMs to be returned to ECI after such demonstrations (although I don’t believe ECI should ask for such a return). ECI has always been saying that their EVMs are not tamperable, then what is ECI afraid of? I suspect that the ECI knows, fully knows, that their EVMs are very much vulnerable to tampering.

As for a few hundred or even a few thousand EVMs that Citizens may wish to get / buy from ECI for such testing and demonstration purposes, other than the knowledge about the vulnerabilities that they enable public to know, they should pose no danger if we believe all the things that ECI has been saying. ECI has been saying that they have an ‘impenetrably strong security protocol’ related to all aspects of handling their EVMs. If that is true, these few hundreds or even thousands of these machines should not be able to find their way back into the pool of genuine ECI EVMs, is it not? Further the public knowing about all the vulnerabilities of EVMs should make no difference to the ‘impenetrably strong security protocol’ of guarding “genuine ECI EVMs”, is it not?

ECI has Indirectly Admitted To Tamperability of EVMs: In my opinion, in fact, the ECI has indirectly admitted that their EVMs are indeed tamperable. One reason is, that as stated above, ECI has never officially made available to Citizens, the “genuine ECI EVMs” for study of them and demonstration of their vulnerabilities. Another clue is in how ECI words its declarations of non-tamperability in many of its pronouncements, saying that the EVMs are not tamperable under the conditions of end to end security protocols that ECI has established for EVMs, meaning, that if people can get their hands on EVMs, they can manipulate them, but the ECI’s security protocol, in the opinion of ECI, prevents people from getting their hands on EVMs for the purpose of manipulating them.

There Are Tens Of Thousands of People Throughout The Country, Who Are Authorized To Get Their Hands On EVMs For Various Reasons: The fact is there are people handling these machines from the point of their design, manufacture, storage, delivery, maintenance of various kinds from time to time, all the way till their ultimate disposal after their useful life, and all these are authorized access points for many persons, numbering in the tens of thousands and possibly lakhs of people, throughout the country. Many of these insiders can during times of such authorized access, access those machines in ways that many not be officially authorized, and/or they can be co-opted by outside criminals with or without their full knowledge, and certainly people with wrong intentions can get their hands on the “genuine ECI EVMs” to study them in detail, figure out all their vulnerabilities and evolve strategies to penetrate the security protocols of ECI around the EVMs, to vitiate election results.

Remember The Good Insider/s That Supplied A Sample EVM To Sri Hari Prasad & Team? Some good person/s who were concerned about the safety of our country’s democracy supplied a genuine ECI

EVM to Sri Hari Prasad and team in 2009-2010, as noted above. If a good insider with good intentions can get his/her hands on ECI EVMs, bad insiders with bad intentions can most certainly get their hands on them as well. The difference is, the bad insiders will not officially tell the authorities or the general public that they have accessed the EVMs or that they have tampered with them.

Incentives For Interested People To Tamper EVMs Are Extremely Strong: Very commonly, there are stories of alleged corruption and irregularities amongst politicians, with huge amounts of monies being involved. It is widely acknowledged that HUGE amounts of money are spent by political parties and politicians to win elections. Very commonly, there are stories of 10 Crores / 20 Crores / 50 Crores etc being offered to politicians to switch their party loyalties. It is commonly acknowledged that politicians and political parties pay money of Rupees 500 or 1,000 or more to targeted poor voters to buy votes in elections. In the recent Lok Sabha elections Sixty Thousand Crore Rupees was reported to have been spent by political parties. One report alleged that one party alone in one state alone had spent about Ten Thousand Crores to try to win elections, and if that is true, the figure of Sixty Thousand Crore spent all over the Country by all parties put together, becomes too small to be true. Why and how do they spend these kinds of money? It is commonly believed that politicians and political parties get to loot unimaginable amounts of money from the country when they come to power. Potential loot for those in power at various levels of Government in the Country will be in the Lakhs of Crores of Rupees worth of wealth. It is commonly believed that there is a strong nexus amongst many politicians, many big industrialists / many big business persons, and many criminal elements, that work hard to get to power for the reason that they can then get to loot the country's wealth in many, many ways. It is commonly observed that many political parties and politicians go to great lengths to win elections. In the above background, if EVM tampering is a very powerful tool that can be exploited to win elections, would it be any surprise that the incentives to tamper EVMs will be extremely strong? It should not be a surprise!

Opacity In the EVM System Is Very Different Than Opacity In A Medical CAT Scan Or MRI Scan etc: Sometimes people ask why is it necessary for EVM related things to be completely transparent. Yes it involves electronics, but there are capable technical people and administrative people to manage it, is it not? Don't we trust a medical CAT Scan or an MRI Scan even though we don't understand the science and technology of how it works? Answer is, there is a difference. If a person tampers a medical CAT Scan or a MRI Scan, what does that person gain? Nothing. On the other hand, if somebody tampers a EVM system to win elections, the gains can be in the tens of thousands of Crores or even lakhs of Crores of Rupees worth of Country's wealth to loot. The difference is in the potential incentives to tamper.

ECI's Ways Are Managing To Keep The Trusting General Public Of The Country In The Dark – That Is All, Nothing More: Only people that are kept in the dark about all of the above serious problems are the innocent people of the country, who ironically have the most to lose. They get to lose the integrity of the country's democracy. They get to lose the true power of their vote. They get to lose the power to chose their representatives honestly. ECI bears full responsibility for its wrongful stand with regard to EVMs, and its consequences on the country and its democracy.

ECI has wrongfully suppressed information about scientific and technological views that are contrary to the views of the ECI itself, in its pronouncements to the Indian People at large – ECI should include scientific and technological views of those who have disagreed with the ECI's own views, in the words of such dissenters themselves: An Independent Scientific Study about the security of EVMs in India, by Sri Hari Prasad, Prof. Alex Halderman, and Sri Gonggrijp published in 2010, is a landmark study on the vulnerability of Indian EVMs to manipulation. ECI was directly touched by the events in 2009 – 2010, leading to this scientific study. Yet, ECI has been suppressing information about this scientific study and its results and its recommendations, in the public pronouncements of ECI on matters of EVMs' reliability versus vulnerability. This kind of suppression is against the interests of Indian people at large and against the interests of Indian Democracy. The ECI should openly and readily share an honest summary of this and similar information that may be opposed to the views of ECI itself, as well as references to the works of such dissenters, so that interested people can carefully evaluate such views counter to the views of ECI, as well as the scientific and technological basis for the views of such dissenters. People of the country can then make up their own minds as to what the truth of this whole matter is. *It is my view that if ECI had honestly included information and references about the pathbreaking scientific and technical study of Indian EVMs in 2009-2010, and the related paper published in 2010, by Sri Hari Prasad, Prof. Alex Halderman,*

and Sri Rop Gonggrijp, virtually all of the claims of ECI in its public pronouncements about Indian EVMs (without VVPATs) being reliable, invulnerable, and tamperproof, would have been totally demolished as meaningless.

Related to above, contents of a letter dated 12th August 2010 addressed to the Chief Election Commissioner, signed by twenty eight (28) eminent scientists / experts in the US who were participants in the 2010 Electronic Voting Technology Workshop / Workshop on Trustworthy Elections (EVT/WOTE) held in Washington, D.C., was never publicised by the ECI and never shared with the people of India.

Similarly, in 2017, the contents of a letter dated 24th April 2017, addressed to the Chief Election Commissioner by Prof Poorvi Vora of George Washington University, USA, and twenty six (26) other eminent and expert signatories, were never publicised by ECI, in ECI's pronouncements to the people of the country.

There was not even a mention of the above letters, or of their contents, to enable people of India to know that there are many eminent scientists / technologists / engineers who have a view that is opposite to the one espoused by ECI in terms of vulnerability of EVMs.

ECI is a constitutionally established fiduciary body that is supposed to work only in the best interests of the people of the country at large. Such a fiduciary responsibility includes responsibility to publicise without hesitation, views of scientists and technologists that may be opposite to the views held by ECI and its own experts' committee, with references to the sources of such opposing views, so that the people can make up their own minds as to which experts to believe and which ones not to believe, and which views to accept or not to accept, etc. ***ECI has failed in meaningfully discharging its above fiduciary responsibilities towards the people of the country.***

ECI's Wrongful Refusal To Do Random EVM – VVPAT Cross Checking Before Starting Full Electronic Counts: First of all, all votes should have been counted in a reliable manner. Given that EVM electronic counts have been established to be tamperable and therefore not reliable, VVPATs became necessary. EVM – VVPAT cross checking was decided on by ECI in a very perfunctory manner in one booth per assembly constituency. After the Supreme Court directed it to do it in five booths per assembly constituency / segment, which itself was very grossly insufficient from a scientific standpoint, the least the ECI could have done was do the random EVM – VVPAT cross checking first, when all the party representatives and the election officials would be fresh. If there was a single mismatch in any of them, the whole idea scientifically was to cross check 100% of EVM – VVPAT pairs in such a constituency or at least in the assembly segment of such a constituency. Instead, the ECI decided to do and announce all electronic counts first, and after most of the political party representatives were tired, exhausted, and in a state of shock from the results of the electronic counts (which are scientifically untrustworthy), when people were dispirited and psychologically in no position to closely watch if the randomization was done properly, and in no position to watch if the VVPAT counts were being done accurately, and after the electronic counts of the corresponding EVMs were already known to everybody, then they do the VVPAT counts. In addition to all of the above, there was no prior announced policy by ECI as to what would happen if there was any mismatch in the random cross checks. Scientifically, this whole thing would be highly / totally, untrustworthy. This was very wrongful conduct on the part of ECI towards the people of the Country.

ECI Has Done A Very Bad Job Of Educating Voters On How To Verify VVPAT Printed Ballot: India has over 900 million voters. The EVM – VVPAT electronic equipment is very difficult to fathom for the first time, for a very large percentage of Indian people. Holding even a few hundred or even a few thousand public sessions of exposure programs for people in a city like Bangalore, to get familiar with VVPATs, and what a voter is supposed to do and how, would be hopelessly insufficient to properly educate all the voters of the city. And I do not know if ECI has held even hundreds of such sessions in Bangalore, let alone thousands. Nationwide, my guess is that a tiny percentage of voters using VVPATs for the first time, would have really understood what and how they are supposed to do with this. Voter verification of the VVPAT printed ballots, is a critical requirement for the EVM voting process to have integrity. In Karnataka, the assembly elections were held in May 2018 and VVPATs were used all the booths for the first time. Yet, well after the elections, when I asked many otherwise well educated voters who actually voted, if they verified the VVPAT printed ballot, many were not quite sure what I was talking about. Many others had an

approximate idea but did not properly verify. Some did properly verify. If ECI was serious about educating all the voters about proper use of VVPATs, surely suitable methods could have been evolved for the same.

ECI Has Intimidated Voters Against Reporting A Wrong VVPAT Printing: As per ECI rules that have been in place during the recent elections, if a voter finds that the VVPAT printed a vote for a party / candidate other than how the voter voted, the voter can complain to booth presiding officer. The voter then has to sign a paper saying what happened, and also agree to a rule as per which, a “test vote” will be conducted with everybody watching. If during the test vote, the VVPAT does not print wrongly again, then the voter agrees as per the document signed, that he/she will be charged with a crime, sent to jail for up to six months besides possibly paying a monetary penalty. Voter has no control over how this electronic equipment behaves, is it not? Will this not intimidate most voters against complaining? Is such a rule fair? What does the voter gain by making a deliberately false complaint? Was this rule put in place to suppress any complaints if and when the VVPAT prints differently than how the voter voted?

Some Other Points To Note Regarding EVMs:

Inexplicable Change in Stance Of Some BJP Leaders: High credit must be given to BJP leader Dr. Subramanian Swamy for leading a court battle culminating in the landmark Supreme Court judgment of 8th October 2013. High credit must also be given to BJP leader Sri GVL Narasimha Rao, the author of a sentinel book on EVMs posing a danger to Indian democracy in 2010. Sri L.K. Advani, the veteran leader of BJP wrote a foreword to this book by Sri GVL Narasimha Rao. Some BJP leaders as above, presumably with the support of many others in BJP, put up a valiant fight against EVMs and the dangers they have posed. All this was when UPA was in power at the Center. After BJP came to power in the Center as well as in many states in 2014, everything changed. BJP is now supporting EVMs, even as all other parties including Congress, have been vehemently opposing EVMs. Is this a mere coincidence?

Was BJP leaders’ fight against EVMs when UPA was in power, out of love for the Country and its democracy? Or, was it out of love for power for themselves in the Country regardless of democracy? It is sad and sobering. Lots of troubling questions! The real losers in this saga, have been the ordinary Citizens of India at large.

Does The Mode of Appointment of Election Commissioners, Create A Potential Conflict of Interest?

I recently came to know from news reports that all the election commissioners including the Chief Election Commissioner, are appointed by the President of India, solely on the recommendation of the Union Government, which practically means the political party in power in the Central Government. It is a natural human tendency for persons to feel beholden to those persons who appoint them to positions of power and prestige. Does this not create a potential conflict of interest in the minds of the Election Commissioners? After all, they are human beings, are they not?

Yes, everybody takes a pledge that they owe allegiance to the constitution of the country, etc. If merely taking such a pledge were to always wipe out all wrong tendencies and all natural human tendencies that may be counter to their duties as per the constitution, wouldn’t it be wonderful?

Should the mode of appointment of Election Commissioners change to eliminate any such conflicts of interest? I think it is an absolute necessity.

Expert Opinion of Dr. Abhay Bhatt and Dr. Rajeeva Karandikar, Given To ECI Was Wrong:

The two statisticians from Indian Statistical Institute, Delhi Center, and Chennai Mathematical Institute, Chennai, respectively, had given an opinion stating that cross checking 479 EVM – VVPAT pairs at random, if they showed no mismatches, was sufficient to ensure that there was no tampering of any EVMs amongst over one million plus EVMs used throughout the country, was wrong. That opinion made no sense to me as an ordinary citizen.

It is now clear to me that they were incorrect in application of statistical methods to the current circumstances, in the way they have applied. They have totally disregarded the possibility of directed, non-random, non-homogeneous, tampering of EVMs by interested political parties with potential motivation and ability to tamper, to try to fraudulently win elections at constituency levels. They have assumed that the

function of VVPAT system is only to detect random manufacturing defects in EVMs, which might have escaped detection at all their earlier quality control checkpoints.

While I myself am not a mathematician, I have the above conclusion supported by the opinions of three different professors of mathematics as being mathematically correct, under the circumstances pertaining to Indian elections and Indian EVMs.

A Wrong Question That ECI and Many Trusting Ordinary Citizens Ask: When ordinary citizens concerned about possible EVM fraud express their concern, ECI and many other trusting ordinary citizens ask – **Do you have any proof of EVMs having been tampered? That is a totally wrong question.** An ordinary citizen can't know about everything that is going on with regard to EVMs, that the citizen in question has no access to. Just because an ordinary citizen may have no first hand proof of tampering having happened, it does not mean that tampering has not happened, it does not mean that tampering cannot happen, or that it will not happen. Yet, if tampering happens at any time, even without the knowledge of any particular ordinary citizen, the citizen stands to de facto lose his / her fundamental democratic right to choose his / her representatives to govern the country / state / local body on behalf of the citizen in question. The issue applies equally to a large body of ordinary citizens, just as it can apply to a particular individual ordinary citizen.

The correct question to ask should be – Does ECI have proof of absolute non-tamperability of EVMs?

To get a meaningful answer to this question, *ECI should make sample EVM/s available to any citizens who may ask, either free, or at cost, for the citizens to take the EVM/s with them, to any place, to anybody, for as long as they wish, and subject the sample EVMs to any kind of testing including disassembly etc, without any limitation, for the purposes of thoroughly assessing them for tamperability in any way they might think of. This scheme should be open and available to all citizens at all times.* A machine that may seem not tamperable in the hands of one person on one day, may very well be successfully tampered by another person on another day. Besides electronic technology is constantly evolving making just about any electronic equipment vulnerable as time passes.

Under such circumstances, if nobody can demonstrate their tamperability, for as long as nobody is able to demonstrate their tamperability, the EVMs can be considered as non-tamperable. The moment anybody can tamper it and show it as such, the title of “non-tamperable” should get withdrawn. The small but very much more advanced country like Netherlands did exactly this. They quickly ended up banning EVMs. What is India's problem?

ECI has never made its EVMs available upfront, for testing for such proof of non-tamperability. In fact they have always had a very opposite kind of attitude, suggesting that they very well know that the EVMs are very much tamper prone. The problem with ECI's attitude is that they can only prevent honest, upfront, well meaning ethical persons, from testing their EVMs and showing their tamperability. Dishonest insiders and outside criminals won't ask for official permission of ECI to get their hands on samples of EVMs, and such dishonest people can figure out all the ways in which the EVMs are tamperable, and can effectively strategize how to manipulate the EVMs to fraudulently win elections, and they can implement their strategies also. In fact, who can say that some dishonest people have not already implemented such strategies?

Many Advanced Countries Have Either Refused To Consider EVMs or Have Tried And Banned Them: Netherlands has banned EVMs. Germany has banned EVMs. Many states in the United States have either banned or have strong restrictions on their use. Japan does not use EVMs. UK does not use EVMs. France does not use EVMs. India tried to sell Indian EVMs in Botswana, and it became so divisive in that country, that Botswana banned EVMs. Most advanced countries use paper ballots. What is India's problem?

A Flawed Logic Of ECI That Once A ECI EVM is Hacked, It Is No Longer “Genuine ECI EVM”: The problem with that logic is, that an ordinary citizen will not be able to tell a “hacked” or “tampered” EVM by looking at it, because from the outside, to an ordinary citizen, it will look the same as genuine ECI EVM. That is where the danger comes from. Dishonest insiders and/or outside criminals who tamper the “ECI EVMs” won't put a prominent label on the EVM stating that it is a tampered machine. That is the problem.

All Computing systems Can Be Hacked: Conventions of computer scientists specializing in voting machines in western countries, have unambiguously declared time and again, that there is no computing equipment made by humans, that cannot be hacked by humans. Indian EVMs cannot be exceptions.

India Can Hold Elections With Paper Ballots Also: As I recall, it was till about year 2000 or so, that all elections were held with paper ballots, at which point, they were taken over by EVMs. Roughly, even if the number of voters at that time were half the present number, which means that there were about 450 million voters, India has held elections with paper ballots for that many, at a reasonable cost, and pronounced its results in a reasonable time, is it not? If today, India has to double the number of people to count votes now compared to before, India can still hold elections with paper ballots and come out with results, at a reasonable cost, and in a reasonable time. Why not? India is not such a bankrupt country in its capabilities that it cannot even hold elections with paper ballots.

Paper Ballots Or EVMs – The Central Issue Is Integrity Of Elections: Paper ballots have been the gold standard in many advanced countries. That Indian EVMs are not trustworthy without a paper trail is also a judicially settled issue in India, although sadly, ECI continues to refer to EVMs as being non-tamperable. This means that the only saving grace for EVMs will be when they are paired with VVPATs, and adequate number of EVM – VVPATs are routinely randomly cross checked, to ensure that there is a 99.9% probability that the electronic counts of EVMs can be trusted. This means that 50% of all EVM – VVPAT pairs need to be routinely randomly cross checked and found to show a perfect match, failing which 100% routine cross checking will need to be done, to get accurate counts of voting, as well as to understand what all went wrong with the EVMs. Further, even if all 50% EVM – VVPAT pairs show a perfect match, if the victory margin of the winner on electronic counts is below a certain level, up to 100% VVPAT counts will be necessary. If all this much VVPAT counting is difficult for ECI to do, it should go back to paper ballots only, without EVMs altogether.

Flawed Logic – “Going To Paper Ballots Is A Backward Step”: Many people say that going back to paper ballots is a backward step, like going to bullock cart era, and that we are “modern” enough that we should not do that. This is flawed logic. What is our primary objective? Is it to accurately record, store and count votes and thus have integrity in elections? Or, is it to do counting in a short time? Or, is it to use EVMs and VVPATs because they look “technical” and besides, we have spent so much money on them? My thinking is that we should focus on protecting the integrity of our democracy, integrity of accurate recording, storing and counting of votes. This should be our primary objective, and all the rest should be secondary and never at the cost of our primary objective.

In A Democracy, People At Large Are Supreme: Conceptually, democracy is rule of the people, by the people, and for the people. People at large refers to people collectively, as opposed to any one “Individual” member of the population. What are the collective voices of the people, what are the collective aspirations of the people, and what are the collective strengths of the people? And where do those collective things come from? That is where the role of each individual becomes critical. It is the individual voices, individual aspirations, and individual strengths that have to come together, to make the “Collective” as above. When some individuals’ aspirations collide with aspirations of other individuals, boundaries will have to be drawn around individuals’ rights, to fairly protect the rights of all individuals in the collective.

All Constitutional Bodies Are Servants Of People And Are Answerable To People At Large: To my understanding, Constitution exists to serve all people of the country at large, in as fair a manner as possible, and in the best interests of all individuals of the Country. People are primary, and the Constitution is a concept and a document to serve them. Constitutional Bodies get their existence from the Constitution, and accordingly, all Constitutional Bodies are there to serve people of the Country at large. All persons serving in the offices of various constitutional bodies therefore exist in those bodies, for only one purpose, and that is to serve the best interests of all people of the Country at large. Such bodies include offices of ECI, Supreme Court, President, Legislative and Executive Branches of the Governments at all levels, etc. Power in the constitution, power in the constitutional bodies, and power for the persons serving in constitutional bodies, all of those come from the people of the country at large, and the power comes only for the purpose of serving the best interests of the people of the country at large, and not for anything else. It is good to consciously remember these fundamental principles of a true democracy, as otherwise, it is easy for people

to lose sight of these fundamental concepts and principles of a true democracy, getting lost in their day to day busy work life and personal life. Keeping in mind the relationship between the collective of “people at large” and the contributions of individuals to making of that “collective”, office bearers of the various constitutional bodies should never do anything that might have the effect of suppressing individual voices, which will hinder a proper development of the voice/s of the collective “people at large”.

Responsibility Comes First, And Authority Comes Only for The Purpose of Discharging Responsibilities: This is true for all persons serving in all positions in all bodies of the constitution at all times, in a democracy. This tends to get forgotten many times by many people serving in positions of authority. It is good to always remember this principle also.

Ordinary Citizens Have An Important Role To Play In A Democracy: After all it is the ordinary Citizens that a country is made of. They must actively play a constructive role that is expected of them in a democracy, to the extent that they reasonably can, and only then, all the Citizens and the Country as a whole, get the most optimal benefits from a system of democracy. This also, is good for all to remember.

Why Do We Need A Democracy After All? This is a fair question, the answer to which, everyone should understand clearly. In a democracy all members of the society are able to optimally contribute to the betterment of themselves individually, as well as for the betterment of the society collectively. In a dictatorship, the dictators will do well and all the rest will be at their mercy and will function as per whims and fancies of the dictators. It is not good for all members of the society. That is why we need as perfect a democracy as reasonably possible, for the benefit of all members of the society.

Killing Democracy Is Not A Victimless Crime: When democracy is killed, all but a few, will tend to lose. Many will lose very badly. The few who happen to dictate will be rolling in power and wealth. A true democracy will not have the kind of neck deep corruption and lack of accountability that our country is mired in. In my opinion, neck deep corruption and lack of accountability that is widely prevalent in our country, is the single most important cause of continued and continuing massive poverty in our country. A true and perfect democracy will largely eliminate corruption and lack of accountability, and will bring the most possible prosperity for all. That will do the most possible, to alleviate the massive poverty in our Country.

I Have Heard Some People Say “India Needs A Good Dictator”: They cannot be more mistaken. The problem with dictators is, the “Good” will be as defined by the dictator, and that usually has nothing to do with what all the others may think of as “Good”. When a person asks for a dictator, he/she does not get to choose the “good” part, and certainly not for long, even if a dictator appears “good” momentarily. Wishing for a “good dictator” is an escapist wishful short sighted thinking. If something good has to happen, we have to make it happen, and be vigilant to keep it “good” all the time.

Are EVMs The Only Problem With Elections In Our Country? No. There are many problems with our elections and our democratic system. The EVM system however, is the most potent and most crippling reality and threat that our democracy is facing at this time.

Isn't Fraud Possible With Paper Ballots Also? Yes, it is possible. The difference however is, that massive fraud can be committed with the EVM system silently outside the view of the general public. Fraud with paper ballots even on a comparatively much smaller scale, will become much more evident and visible to the general public. EVMs are very dangerous for that reason, and paper ballots are much safer for that reason.

What Is The Problem For ECI To Use Paper Ballots Instead Of EVMs? The whole country is saying that we need elections with integrity that are also seen to have integrity. The country is crying for free and fair elections. Some people say that manual counting of paper ballots is ancient technology, and that they want “modern” technology. The point is, ancient or modern does not matter, what we need is “reliable” technology. If paper ballots are the most reliable, then let the EVMs go to hell. After all, Germany and Netherlands had no problem sending EVMs to oblivion! France, UK, Japan, Canada and many other developed countries had no problem rejecting EVMs outright in favor of paper ballots! What is our problem? Some say that it takes too long to count paper ballots manually. We were counting paper ballots manually and declaring results in a day or two until about twenty years ago, have we now become a more backward

country that we have lost those capabilities also? It is possible that some will now start saying that so much money has already been spent on EVMs and VVPATs and now we are obliged to use them. My point would be, if we as a country made some very wrong moves knowingly or unknowingly, and ended up spending this kind of money, would it make any sense at all to sacrifice and kill our democracy altogether, as a compensation for whatever mistakes we as a country might have made till now? I hope and pray that we as a Country will not descend further into this kind of irrationality.

Do I Believe EVMs Should Be Banned? In my opinion and to my understanding, banning EVMs and going to paper ballots will be the best option – far simpler and far more transparent and far cheaper and far quicker than the second best option.

The second best option is to radically change how EVMs and VVPATs are being used now, to make the entire system including the electronic hardware and software and the entire system being fully thrown open transparently for any and every citizen of the Country to examine and/or have examined by anyone of his/her choice, to fully expose all its vulnerabilities to fraud, and making the system completely fraud proof if at all possible. ECI's stance has however been one of near total opacity till now, and that is a huge problem. If the EVM-VVPAT system is continued to be used, there should be routine random cross checking of 50% of all EVM-VVPAT pairs in all constituencies (the mathematical logic for which has been clearly shown higher up in this note), and this cross checking should be done before electronic counts of EVMs are undertaken in the pairs that are not chosen at random. Further, if there is a single vote mismatch in any EVM-VVPAT pair, all 100% of the EVM-VVPAT pairs will need to be cross checked, and the VVPAT counts should be used for determining election results, with the EVM electronic counts and their discrepancies with the VVPAT counts being used to do a thorough forensic analysis of what all might have gone wrong. Further, if a routine 50% routine random cross checking is done in each constituency, and there is a perfect match, but the margin of victory is below a certain level, then also up to 100% cross checking will need to be done of the remaining EVM-VVPAT pairs. Another big problem here is to ensure true randomization and true cross checking. If these are faulty or have been manipulated, then it is useless. All of what is said in this paragraph, has very solid mathematical backing using the principle of probability, which is simple enough to be understandable to anyone who has scored 60% or more in class-X mathematics, with some effort. These figures have been certified as being correct in mathematical concept and calculations by three different professors of mathematics, all of which I had submitted in my petition in the Supreme Court praying for 50% routine random cross checking of all EVM-VVPAT pairs in each constituency. All of the above to ensure with 99.9% probability that there has been no tampering of EVMs.

Besides above, there will also need to be continuous improvements in many other procedures related to elections in our country.

Have All The Recent Elections Held In Our Country Been Free And Fair? In my personal opinion, NO. If the processes and procedures are highly opaque, highly faulty and highly fraud prone, what results come out of such procedures and processes, cannot be trusted. It is a very straight forward matter in science, even in the science of holding free and fair elections.

Do I Think That Many Of Those Who Won Recent Elections Would Have Lost And Many Of Those Who Lost Would Have Won If There Were Free And Fair Elections In My Opinion? Probably so. If we had free and fair elections with transparent processes and procedures with integrity, we would have found out the true results. In my opinion, the processes and procedures were highly faulty, highly fraud prone, and highly opaque, and as a result we really can't say what the exact results would have been otherwise. The results would very likely have been different, but as to how different and in what all ways it would have been different, nobody can say.

Elections In India Have Now Become A Farce: In recent years, quietly and without the knowledge of most ordinary citizens, elections have gotten reduced to a farce. People go through the motions of campaigning for and voting for whoever they wish to, but who wins is decided by whoever is controlling the EVMs.

Those Who Control EVMs Are Very Bright, Very Intelligent, And Very Resourceful – They Use The Weapon Very Strategically: Many times unsuspecting people ask how and why the same party won't win

all elections if that party could control EVMs. The fact is, if one party got all the votes in all the booths in all the elections, such results will readily be seen as fraudulent and will become indefensible in the eyes of the public. The people who control EVMs are very highly capable, very intelligent, very resourceful, and they use that weapon very strategically. They will let other parties win some by-elections, they will let some parties win some assembly elections, they will let some parties win some individual seats, etc. This creates a good camouflaging effect for, when they need to use this EVM weapon for a decisive stranglehold on power in the Government/s. In elections that have a huge bearing, they will use this extremely potent fraudulent tool of EVMs strategically, to realize their goals of having a firm hand on power in the Government/s where it really matters. It will be too dumb to use it thoughtlessly, all over and all the time. Also, even with this EVM weapon firmly in their hand, being human after all, they can make some miscalculations and mistakes, and the results sometimes can be unexpected and/or undesirable in their view. It is also true that the ability to use this EVM weapon quietly behind the scenes, may not be equally good in all parts of the country, at all the times. All of the above however should not lull us into ignoring this danger or under estimating the horrific damage that is actually being caused and/or can be caused, to our democracy.

In India, We Now Have A Fake Democracy Dancing, And True Democracy Is In A Coma: To my understanding, in India, we have had a deluge of fake information, fake news, fake stories, distorted information, suppression of true information, etc. There have been all kinds of assaults on our democracy. Perhaps the most potent damaging weapon has been a highly fraud prone EVM system of elections. An election result that comes out of a highly fraud prone EVM system cannot be trusted. In my opinion, the recent election results are not legitimate. Yet, there is nothing I can do. I am a small person. I have a feeble voice. As much as I would like my 130 Crore fellow Indians to hear my cries of anguish, I know hardly anybody hears, hardly anybody believes, and hardly anybody cares, or at least it feels that way. Even if many of them did care, perhaps they don't know what to do either. In our country, true democracy is in a coma, and a fake democracy is dancing.

I Will Not Give Up Hope. I will Keep Trying My Best. One Day Something Better Will Happen. One Day Something Good Will Come Out. Let Us Keep Hope Alive!

Enclosures:

1. Copy of My Letter To ECI Dt. 29th April 2018 – Reg 'Prima Facie Fraud By ECI'
2. Copy of ECI's Reply Letter Dated 21st May 2018.
3. Copy of Letter dated 12th August 2010 addressed to Chief Election Commissioner, by twenty eight (28) eminent international scientists / technologists on the vulnerability of EVMs.
4. Copy of Letter dated 24th April 2017 addressed to Chief Election Commissioner, Prof. Poorvi Vora and twenty six (26) other eminent international scientists / technologists on the vulnerabilities of EVMs.

For Further Information, Reading, Study Etc:

1. My personal website www.drrameshbellamkonda.in
2. Indiaevm.org - <https://indiaevm.org>
3. Book "Democracy At Risk" by Sri GVL Narasimha Rao (Published 2010) (Freely downloadable from the site http://www.indianevm.com/book_democracy_at_risk_2010.pdf)
4. Demo of EVM Hacking In Delhi Assembly, NDTV YouTube Link - <https://youtu.be/81ozk3jF5Gk>