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"Not to electronic voting": why is electronic voting successful in some countries and fails in others?

Fernando Barrientos del Monte, Universidad de Guanajuato







TECHNOLOGY AND CITIZEN PARTICIPATION IN THE CONSTRUCTION OF DEMOCRACY

Ravneet Singh / Salvador Romero Ballivián / Pablo Gutiérrez / Ezra Chiloba Fernando Barrientos del Monte / Marco Antonio Vargas / Aldair de Almeida Anhaia José Tomás Figueroa Padilla / Raúl Zambrano / David Sasaki / Jorge Soto





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"NO TO ELECTRONIC VOTING": WHY IS ELECTRONIC VOTING SUCCESSFUL IN SOME COUNTRIES AND FAILS IN OTHERS?

Fernando Barrientos del Monte¹

INTRODUCTION

The objective of this paper is to highlight aspects that are not technical, or legal or strictly electoral but must be considered in the process of implementing electronic voting systems. Electronic voting is a reality that has gained momentum in several countries, but it is important to note that it is not a linear process, initially it is not quite socially accepted, nor is it a process that must forcefully and necessarily be implemented in all democracies.

It is therefore important to explain why in some countries its implementation has been successful and why in others it has not. There are several socio-political aspects that decision makers in the field of electoral management should consider at

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the time of commissioning. In some countries they focused on legal and technical aspects of electoral management, ignoring public opinion, the "experts", the academia and obviating the supposed virtues of a "new" system for voting. Electronic voting is not the panacea, it is simply the implementation of new mechanisms to cast a vote and improve the efficiency and speed in the count.

Technically it can be (or is) complex, but without any complication that cannot be resolved by the current state of science and technology. However, voting is not a technical issue; it is a political phenomenon with highly relevant implications to the life of a society and of a democratic regime. Neglecting the social and political aspects which surround the electoral process through technical and legal issues in the implementation of electronic voting systems can mean wasting hours of work, research and investment of large sums of money. Three questions guide this essay. Why is there any opposition to the implementation of electronic voting? Why did this implementation succeed in some countries and failed in others? Who and why are they opposed to electronic voting?

For responding in a didactic manner we must first make a brief reflection on the relationship between politics, democracy and new technologies; secondly, we explain the motivations for implementing electronic voting systems; and thirdly, we balance out among some success cases such as in Brazil and Venezuela, and we mainly expose those that have failed such as Ireland, England and Holland. Finally, we take stock of the political conditions that make the difference between success cases and those which have not achieved it

POLITICS AND NEW TECHNOLOGIES

There is no doubt that the new information and communication technologies (ICT) that have been developed in the last quarter of the XXth century have marked a before and after in the history of mankind. The advent of computers, (and mainly) the information processors and their massification, as well as the development of the internet and of all its applications in communications and commerce, are without a doubt phenomena comparable to the creation of the printing press by J. Gutenberg in the XVth century, and the advent of the steam engine in the XVIIIth century. These are events that mark the beginning of a new era, they marked a before and an after. These historical circumstances themselves did not impact the development of politics, but they do partly explain fundamental changes in this area: the development of books helped to massively spread the Renaissance political ideas first and later the Enlightenment's. The invention of the steam engine ushered in the industrial revolution in the XVIIIth century, impacting the labor market known until then which led to labor movements that later marked the appearance of mass parties. The same is happening with ICTs in the early XXIst century, their emergence and development are the foundation of an Information Revolution marking, like the events listed above, a before and an after in the history of mankind.

Despite the rapid development and advancement of the ICTs, their impact is still undetermined and they have generated both positive and negative utopias (Cotarelo, 2002; Rodotà, 2000).

Gradually, new technologies have been inserted into the dynamics of relations between the government and the governed;

various processes such as tax payments, tenders and requests for documents and public information are based on ICTs, developing what is now known as e-government. This technological progress has encouraged a growing number of scholars, among academics and intellectuals, as well as a large segment of players who decide on policy and electoral management to develop and implement a range of ideas and projects which they think they can "remedy" to some of the shortcomings of representative democracy. To date, practical mechanisms are: transmission of the debates and discussions in the parliaments and in the halls of the supreme courts, the opinion polls with no legal value, and especially electronic voting systems. For decades we have had direct information systems, radio and television, and lately the internet. But in the early XXIst century there are also instant intercom systems (social networks and mobile phones). Direct communication has an impact on social relations, what matters is the immediacy, instantaneousness (Cotarelo, 2002).

Despite our day to day use of new technologies, we do not know if it is too early to try to figure out to what extent these will impact or are impacting in politics. ICTs are transforming the public space, and politics has always depended on their relationship with it. Transformations of one imply transformations of the other: political practices, social representations, interactions between individuals, relationships of power, among others, involve flows that contribute to shape certain structures and concepts (Cairo, 2002:19). Some argue that this gives way to a digital democracy, but it can also be argued that since social processes are not linear, we may find ourselves in the future with a digital anarchy or even a form of digital authoritarianism, as access is free, but control is not so much. We do not know the extent to which policy changes will be positive or negative, what we do know is that politics is changing and society is optimistic about the potentials of the new technologies and their applications. History has taught us that sometimes the introduction of new technologies does not always have followers, as happened with Luddism in the early XIXth century in England: a labor movement that was characterized by a hatred of machines on the grounds that these replaced workers.

Today there are various groups in the world, consisting mostly of computer technicians and engineers, who are opposed precisely to the use of new technologies in politics and especially in elections. For its part, politics has not always been reliable and much less so in the field of good conscience. According to data from the Latinobarómetro (1995-2009) the majority of the population in the region believes that the elections are fraudulent and in virtually all countries political parties are mistrusted. But citizens are not alone, even Latin American politicians themselves, interviewed during several periods (1995 to 2008) in the Parliamentary Elites of Latin America project of the University of Salamanca (PELA), indicate that they largely distrust the transparency of the elections that have led them to a seat in the legislature of their country. The introduction and use of new technologies in the political decision-making processes, carried to the extreme, may disrupt the foundations of representative democracy, which so far has proved efficient in mass societies.

MOTIVATIONS FOR IMPLEMENTING ELECTRONIC VOTE

The control of certain aspects of the electoral process such as the formation and maintenance of the electoral roll, the transmission of voting results (both with more than two decades of application in almost all democracies) and ultimately the implementation of electronic voting systems, are the clearest example of the optimism in the possibilities of new technologies. The motivations for implementing electronic voting systems are of two types: technical and sociopolitical. The former belong to the dynamics of the incorporation of ICTs in everyday life, the replacement of administrative procedures in the administration of elections is part of the ongoing modernization which almost all areas of election management are subject to. These can be summarized as follows:

a) Increase the efficiency in receiving votes.

This is perhaps the most important reason, as it is about avoiding all the mistakes in voting that commonly occur with traditional ballots. While it is not a guarantee, it does significantly reduce errors such as double voting, makes the voter's choice clear and even allows correcting the option.

b) To improve the accuracy in the count.

Electronic voting systems, by their very nature and design, are accurate in counting, and reduce (or even eliminate) errors in the counting of votes; the role of citizens participating in the count is reduced to seeing that the information is transmitted in a clear and incorruptible way.

c) To reduce the time to get the results of the vote.

Related to the speed in counting, electronic voting systems allow speeding up the counting of the total votes for each and every one of the tables or voting booths, as well as the total sum in a short time. Even the size of a territory as large as Brazil, for example, a country where electronic voting machines have been used since the election of 2000, was not an obstacle for that a few hours after the polls close the final results are known, which in previous years only became known two or three days later.

d) To improve the auditing of the voting process.

Under certain conditions it is possible to audit the voting process to ensure that it meets the democratic requirements of vote casting, that the processes were not corrupted, and that effectively, the vote that the voter casts, corresponds to what the system recorded.

On the other hand, the socio-political motivations have a strong symbolic and evaluative component on the role of new technologies in society, these are summarized as follows:

a) Demonstrate the capabilities of the new technologies.

Basically many of the initiatives that propose the implementation of electronic voting systems have no justification other than to point out a supposed need to "modernize" or "keep up" with new technologies, their use representing a sign of modernity and avant-garde although there is no need for their use. Furthermore, this impulse is given by companies engaged in the development of such technologies. The extent to which electronic voting really is necessary appears to have no connection with this justification, the fact is that in several countries the implementation is the result of the confluence of other factors, but it is also true that it includes a *naïve* perception that its simple use is in itself, a symbol of modernity.

b) Increasing confidence in the electoral processes.

If well implemented and used new technologies may increase confidence in the development of elections and in the voting exercise, although this assumption is not confirmed. On the other hand, minimum failures or even mild suspicions of a political nature can lead to the dismantlement of the entire electronic voting system, even if it is technically reliable, and to be replaced again by the "traditional" system (see below the example of the countries where this was the case).

c) Provide better information to political parties and citizens. Consequently, by reducing the margin of error in the votes counting, better information is obtained about the behavior of voters and parties.

d) Extend facilities for vote casting.

Depending on the type of system in place, electronic voting, for example via the internet version, facilitates voting remotely. Some projects such as the *e-poll* in various European countries is based on the installation of special kiosks for voting from any European country. Other versions of electronic ballot boxes are adopted to facilitate visually impaired people the cashing of the vote.

Both technical and socio-political motivations drive the logic of development and implementation projects for electronic voting systems.

While discussions on the feasibility and desirability of electronic voting have derived from socio-political motivations (Is social and political voting really justified?), a variety of arguments have emerged from technical issues (Is electronic voting really –more– secure?) that in other contexts have brought down systems already in place.

SUCCESS AND FAILURE CASES

The emblematic cases of successful implementation of electronic voting are Brazil and Venezuela in Latin America. Brazil began to use Direct Electronic Recording (DER) ballot systems in 1996, achieving full implementation in all their territory in 2002. The number of voters is very high (136 million in 2011) and given the extent of the territory the electronic ballot box has streamlined the flow of information with the overall results,

in the case of national elections, being available at midnight. In previous years, this situation could have taken up to three days because of the topography of the country. Despite the proven success in Brazil, there are several groups that have criticized the implementation of the electronic voting system: in the 2002 and 2006 elections, false ballot boxes have been found, and it is mostly computer engineers who have consistently indicated that the system is vulnerable. In Venezuela an optical vote reading system (OVR) has been used since 2000, and was extended to the entire territory during the mayoral elections and the referendum on the permanence of president Chávez in 2004.

As in Brazil, in Venezuela the main critics of electronic voting have been specialists in electronics and computing. Although technically the system combines the traditional system with the new technologies, allowing for a twofold check if there is any doubt about the outcome of the polls, the electoral body did not allow for such a review to be carried out, which in turn increased doubts on the results and permitted that in the last decade the incumbent government has swept the elections.

In Europe, the only country to use electronic voting machines regularly for more than twenty years was Holland. In other countries the interest in the automation of electronic voting was born from the impulse of projects that began to be developed at European Union level, such as the *e-poll*, *cyberVote*, and *TruE-Vote*, as well as the growing computerization process of all sectors of public life. I will focus briefly on three landmark cases (following Caporusso, 2010: 25-53), Ireland, England and Holland (Estonia and Germany, are not covered for space reasons), where policies designed to strengthen participatory democracy were implemented, even to talk about *e-democracy*: innovative electronic voting systems were adopted, developed and introduced, but were later suspended or revoked.

The case of Ireland is an example of how the pressures of civil society can influence in revoking government decisions made at the highest levels. In 2002 the government of that country carried out pilot projects and experiments. In 2003 the initiative to replace the ballots for a DER (Direct Electronic Recording) developed by the Dutch company Nedap/Power Vote was formally presented in order to be used in the local and European elections of June 11, 2004. The vote in Ireland was cast by means of open lists and in order of preference. Each button on the electronic ballot box proposed is associated with a candidate and the keyboard, in order to help voters avoid distracting errors in the sequence order of preferences. Electronic voting is a very efficient solution to count the votes and issue the results. However, the system does not provide for verification by the voter of the sequence selected on the screen and there is no paper trail. Some computer experts reacted in a short time and created the pressure group "Irish citizens for trustworthy e-voting" who defined themselves as "a group of ordinary citizens who believe that no electronic voting system can be reliable unless it does not include a paper verification system for the voter". The doubts were not only related to the lack of proof on paper, but also to the choice of a private maquiladora that uses proprietary software and therefore does not make the source code available. Based on the protests from this group, the government decided in March 2004 to create an Independent Commission to examine the Nedat/ Power Vote system. In April of that year a report was issued, that recommended not to use the machines already acquired due to the failure to ensure with certainty its proper operation.

The commission did not have enough time to carry out the necessary tests and inspect each of the components of the machines. The inability to access the final software, the unavailability of the source code and other technical issues weighed on the

decision of the Commission, which also suggested amendments to the electoral law regarding the distribution system of the remaining votes, an imperfection that replicated in the electronic counting system. In 2006 the same Commission published a more extended report which even showed the position of the maquiladoras. This experience is completed with the acceptance of the authorities of having made a huge investment in a project that is unwanted by the public. The cost of over EUR fifty million was not justified in the context of the recent economic crisis and became the scapegoat for election campaigns, and by April 2009 the government finally announced that Ireland would not automate the voting system.

In England the use of new technologies in the elections was proposed in order to achieve greater voter participation. A concern that began to grow in 1997 when a level of 71.3 percent was reached, the lowest participation level since the 1935 ballot, which was confirmed in 2001 when slightly more than 60 percent of the electorate showed up at the polls. Therefore in 2002 the *Independent Commission on Alternative Voting Methods* was created, which in its report stated the familiar:

Whatever the arguments for or against the idea of facilitating the vote, we believe that culture is more important than convenience, and that politics is the main reason why we vote and not by the procedure. In short, people vote when they feel that there are good reasons for doing so and that their vote counts. It depends on the parties and candidates during the election campaign, to provide these incentives: when they do, citizens vote, even if the procedure is inconvenient. If they don't do so, citizens do not vote, even if they have at their disposal the most advanced, friendly and accessible voting technology possible. Voting is a political act, not merely a procedural act.

Despite these findings, the Labor Party under Tony Blair continued to believe that one way to reduce absenteeism was to automate the polls. To achieve this, a green paper entitled In the Service of Democracy was outlined, to conduct all tests necessary to provide electronic voting facilities to all those who so wished starting from 2008 but no later than 2011. But criticism continued, some stated that the *green paper* seemed to have been written by well-meaning people but who knew little of the real world: one critic noted: «that the citizens have the desire to use new technologies does not necessarily mean that they want to use them also for taking political decisions». But these and other criticisms did not stop testing. Five guidelines were proposed that sometimes overlapped: a) the extension of postal voting, b) the electronic count (e-counting), c) voting at boxes through electronic voting (e-voting); d) vote by phone (t-voting) and voting by internet (i-voting). There was a reason behind such a momentum which was a product of electoral reform: postal voting, a form of remote voting, had been in force since 1918 only for those who could argue reasons to justify its use. But in 2000 the Representation of the People Act was signed and postal voting was made accessible to anyone who requested it without the need for explanations. The percentage of voters in this mode increased exponentially, in various polling stations variations from 3 to 45 percent were observed, with a nationwide average of twelve percent. It was thought that a system that reduces the "costs" or that requires less effort on the part of voters may increase participation. Also in the context of the American experience of the 2000 presidential election that involved a series of scandals, it was thought that a faster and more accurate count should increase or at least maintain confidence in the electoral system. Between 2000 and 2001 ten automated voting experiments were held in an equal number of locations combining the various guidelines in local elections and referendums. But reports from the Electoral Reform Society,

an independent group that is dedicated to the promotion of democracy, said the machines used for testing of *e-counting* had problems with getting stuck, were slow, had difficulties in the allocation of votes, and that if used at a national level would imply an increase in costs without offering in return a reduction in counting time, much less an increase in the electorate. This group recommended that they be used only in contexts of reduced electorate dimensions. With respect to voting by telephone and internet they noted the difficulties of auditing the procedure and the low capacity to ensure the secrecy that both systems might offer. At the end of the pilot tests of 2002, the ad hoc commission, "Independent Commission on Alternative Voting Methods" issued an opinion contrary to expectations, as various elements were brought together to be wary of the tested voting systems. But not only were the evaluations of the Electoral Reform Society and the Independent Commission not favorable to the introduction of electronic voting, some local government agencies, such as the Local Government Association upon evalution of their own experiments found that new technologies did not attract younger people:

Most non-voters, especially younger ones, express different reasons for their disaffection. In particular, they are much less sensitive to voting than more adult persons. And among internet users, the youngest are the least likely to vote electronically.

The results of their surveys indicated that a large proportion of the population supports the introduction of electronic voting, but the same commission clarified that "support for the electronic voting system is not the same as a demand for it by the public". In 2003 a very extensive test was carried out among 160 thousand voters in 59 pilot tests covering approximately fourteen percent of the electorate, arriving at similar conclusions: security concerns due to the opacity in the count and the

absence of paper proof, from which it was suggested that electronic voting be implemented on a limited scale and never on a national scale (Wright, 2006). In 2007, other pilot tests were carried out in which only *i-voting* and *t-voting* systems were tested, all supervised by independent observers and by the Electoral Commission, to which a pressure group called Open Rights Group (ORG) was added and funded by the Rowntree Reform Trust. The ORG was able to attract hundreds of volunteers to "dedicate a day to democracy" as was their motto. From the beginning, members of this group pointed out the lack of seriousness in the organization of the tests, and the low quality in certification procedures and quality control of the instruments used. Above all, it was observed that many of the representatives of the local election authorities were totally dependent and their actions were directed by the suppliers of the voting machines, which reflected a total lack of technical training and skills to manage such systems. Moreover, the suppliers of the *e-counting* systems were not knowledgeable enough about the British electoral system, which identified two inefficiencies, one on behalf of officials at a technical level, the other by the supplier representatives at electoral management level. The findings of these tests and subsequent analyses led to relinquishing the project both for local and European elections in 2008, a year when it was thought to automate the entire electoral process, and especially not foreseeing any future project in the short term.

The Dutch case represents the situation in which the movement of certain sectors of computing questioned the legitimacy of a widely diffused system put into operation in previous years. In the Netherlands DER machines had been implemented since the 90s to gradually replace electromechanical machines. By 2006 the whole country, with the exception of Amsterdam in which pencil and paper ballots were still used, began to operate voting machines produced by Nedap/Groenendaal and a few by

its competitor SDU. In that year Amsterdam decided to join the experience of electronic voting, for which Rop Gongrgrijp, an outstanding member of the so called *Chaos Computer Club* that brings together hackers from various European countries, upon perceiving risks in the voting system called to meeting a group of experts in computer science and sociology. This group acquired two voting machines that had not been used by a municipality and managed to start them up and through the use of social networking and online video showed the shortcomings of such machines in three ways: mechanical –unsafe locking system-, electronic -the memory can be changed for another- and electromagnetic –it was possible to register other results and not those that the voter marked. Moreover, the hackers responded to the challenge by the software producer who dared that chess could be played on such machines, which they did in a few days. The operation of this group was completely mediatic and casted doubt on the entire system that had been used for over a decade. The government responded with new evidence on the electronic voting system and in 2007 declared, once a special report in this regard had been issued, that the system was being abandoned and they were returning to the traditional system of ballot and pencil. In 2009 all Dutch people returned to voting with traditional ballots and it was assumed that it would be inevitable to assume the cost of the slowness in the count, but that -according to a group slogan- "in the Netherlands we know how to use paper and pencil. The sky did not fall and we didn't go back to prehistory".

CONCLUSION: THE LIMITS OF ELECTRONIC VOTING

The speed at which technology is renewed has forced us, since many years ago, to an unsustainable rate of reorganization of our mental habits. Every year we have to change computer, because these machines have been designed for just that: to become obsolete every year (Eco and Carrière, 2010:45). Can electronic voting systems keep pace with these dynamics when elections are held every few years and generally on a single day?

On the other hand, new technologies create certain illusions. It is sometimes thought that they came to stay but we do not know that

In 1937 the crash of the Hindenburg ended the career of airships, which were thought to be replacing ocean liners. And the same happened with the Concorde, when the crash of 2000 ended its career. In both cases they were technologies that surpassed others. Who would counter that it was better to cross the ocean in three hours than in nine? (Eco and Carrière, 2010: 22). But the accident made it clear that it was very expensive and it was discontinued. Today we prefer the wide body aircraft with greater safety. Almost all European examples on electronic voting that have been mentioned are attached to this idea: it was not suspended for not believing in its benefits and its ability to deliver speed in counting, but due to the political costs that could lead to putting the electoral process in doubt.

A lesson learnt is that in all cases where an opposition to the implementation of electronic voting existed, it was not a large group or masses of people. On the contrary, oppositors have been very small groups but with a high educational level and knowledge of ICTs, and their capacity and mobilization are located entirely within the law and their challenge to government decisions is very effective. So what lessons can be drawn? First, the simplicity and everyday use of new technologies does not always imply a blind trust in them. One thing is to use them in order to simplify life and another to use them for political decision-making aspects. Second, the implementation must be sufficiently clear and

transparent, involving many specialized fields of the technology world, as the lowest degree of mistrust can put the whole process in doubt. Third, the traditional ballot plays a crucial symbolic role, it is a material display of vote casting, and in some contexts its elimination is not justified. Fourth, electronic voting is not the panacea, as it does not prevent electoral fraud; it complicates its realization but does not inhibit it. Fifth, the logic of politicians is not the logic of the experts; this can lead to the implementation of electronic voting systems based on simplistic arguments without taking into account the voice of its developers. Sixth, every electronic voting system involves the help of others (maquiladoras) that have little or nothing to do with electoral management; this can have negative political implications if the bidding processes and an adequate supervision are not shielded.

Finally it should be mentioned that the cases of success are different because in Brazil and Venezuela as well as in many countries in Latin America the implementation of electronic voting has been in the hands of the electoral management bodies: permanent, highly skilled bodies that are dedicated exclusively to electoral management, an advantage not found in any of the European countries. Whereas there is no doubt that electronic voting will be a reality that will eventually be widespread throughout the world despite the movements opposed to its use, it is also true that this will improve current democracy, but we must consider that a bad implementation in itself can damage democracy significantly.

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TECHNOLOGY AND CITIZEN PARTICIPATION IN THE CONSTRUCTION OF DEMOCRACY

As we live in an age of technological acceleration this book is very much of its time. Its ten essays, written from different outlooks, discuss how technologies, social networking and, in general, the *Web 2.0* platforms that are applied and used when dealing with electoral and participatory democracy. The publication's background, its essential component, points to the ever-increasing ability of citizens to change their situations when they have better access to information.

This edition is part of the work carried out at the international seminar "Technology and Citizen Participation in the Construction of Democracy", co-organized by IEPC Jalisco and UNDP Mexico. It is displayed as a logbook, an exercise in reflection and a comprehensive study about electronic democracy and how it is related to citizenship building and citizen participation.





