The case against electronic voting in Ireland

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The Irish government is in the process of introducing electronic voting, with the expectation that all voters will use the system during next year's elections for local government and the European parliament. This process has become increasingly controversial, but criticisms have centered on the technical shortcomings of the system chosen. I intend in this essay to broaden the debate by critically interrogating the social effects of the computerization of the voting process, and by identifying some of the underlying biases inherent in the project. Using the work of Illich and Habermas in particular I will question the manner in which not only proponents of the proposed system but also critics have framed their discourse within a neutral conception of technology. The presumption has often been that if only an appropriate technical fix could be determined this would address all the problems associated with electronic voting.

Both Illich and Habermas emphasise the importance of an enabled public in their work, though in different ways. Illich has been critical not only of the process surrounding modern technological development, but also of the emergence of systems such as universal school-based education, as damaging the autonomy and personal development of individuals. He urges, instead, the adoption of what he calls tools for conviviality, technologies that "serve politically interrelated individuals rather than managers."[1] Habermas for his part, as part of his theory of communicative ethics urges the use of communicative action rather than strategic action – that is the use of rational thought instead of reliance on rule-based systems. Examining electronic voting from the

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[1] Illich. 1973. Tools for conviviality. xxiv.

point of view of these theorists will allow a recognition that the public interest could have been better served than by the introduction of electronic voting. Apart from identifying an underlying technophilia that sees adoption of cutting edge technology as an end in itself, I will show that electronic voting also feeds an expert-based culture, and serves to commodify and corporatize the voting process. Rather than concentrate on abandoning a manual system that was generally sufficient for the task at hand, the government should instead investigate means of enabling members of the public to participate more broadly and deeply in the political process.

Ireland is a constitutional parliamentary democracy, with voting taking place under a relatively rare system – proportional representation using a single transferable vote (PR-STV).[2] There is a general recognition within Irish political debate of the strengths of the system, with the result that a number of attempts by the largest political party, Fianna Fáil, to replace this system with a plurality ('first past the post') or list system (which it is generally believed would assist larger parties at the expense of smaller parties and 'rogue' party members), have been rejected by the electorate over the years.[3] Under PR-STV parliamentary representatives – known as Deputies or, in Irish, Teachta Dála (TDs), are elected from multi-seat districts (constituencies). One of the recognized strengths is that the vast majority of voters end up having their preferences reflected in the people elected. Indeed "about two-thirds of voters see their first choice candidate

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[2] The Constitution of Ireland. 1937. 12.12.13.

[3] Gallagher and Katz. 1997. Ireland: the Archetypal Single Transferable Vote System.

elected, and on average around 20 percent of votes do not contribute to the final result."[4] This requires a somewhat involved counting process, though one relying on a relatively small number of rules, and the voting process itself is straightforward. There are also a number of easily identified weaknesses in the current system, some, but not all, of which have been cited in the moves to introduce electronic voting.

The register of electors, which determines who is able to vote, and at which elections, is maintained at a local level. The register updated on an annual basis, by accepting applications to be added (and notifications to be removed) from members of the public, by having staff periodically go house-to-house enquiring about newly eligible voters, and by utilizing information from the national social welfare database on people turning eighteen. Once an election or referendum is called there is a short period of time where a member of the public who is not on the register but who is otherwise eligible can be added to a supplementary register. The register is made more complicated by the fact that Irish electoral law allows various groups of people to vote in different elections – Irish citizens can vote in all elections and referendums, for example, while all residents of an area can vote in local elections. Since the register of electors is organized on a local basis it is possible for people to be registered in two or more constituencies, and there is at least anecdotal evidence of people voting two or more times. The annual updating of the register means that, unless they apply to be added to the supplementary register, a person passing the age of eighteen may not be eligible to vote in an election occurring in the coming year.

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[4] Ibid.Ireland: the Archetypal Single Transferable Vote System.

The number of seats in a constituency does not affect the process currently undertaken by a voter. When a voter enters the polling station he or she approaches the polling clerk and states his/her name. The polling clerk may first ask for proof of identity. The clerk then takes the appropriate ballot papers, punches them with a stamp, and hands them to the voter. Where several different contests take place on the same day – as with the local and European elections this coming June - each uses a separate ballot paper, and as noted above voters may only be eligible to vote in certain contests. The voter takes the paper(s) to a booth, fills them out using a pencil or pen, folds them, and places them in a box generally placed near to the polling clerk. The current system is paper-and-pencil based, with voters printing numbers beside candidates in order of their preference. For instance a voter prints '1' beside their favourite candidate, '2' beside their next preference and so on. Where a voter wishes to support only one candidate they can place either an 'X' or a '1' beside the candidate. A voter can support as few or as many candidates as they wish, with the only restriction being that there must be a clear order of preference – for example no two candidates can receive the same number preference from a voter. The proportion of votes declared invalid is generally very small, with a fair number of these seeming to be intentionally 'spoilt.' That is, it is the intention of at least some voters that their votes be invalid – we will discuss this in more detail later in this essay.

The manual count itself is, due to the transfer process and the multiple counts required, quite labor intensive, with counts generally taking place over a number of days. Counting usually begins the morning after the vote, when the locked and sealed boxes from each polling station are brought to the counting station for that constituency. The

boxes are opened and the ballot papers in each are sorted and counted. By tradition and custom this happens in full sight of observers – representing, mainly, the various candidates, but also the media and the public. The candidates' observers, known as tallymen or tallypersons, use the sorting process to conduct an informal estimate of the first preference votes, the tally. Thus the monitoring provides both independent oversight of the counting process and an early indication of the probable results. The tally also gives detailed information on voting patterns than is otherwise available, giving a breakdown per candidate per ballot box. This can provide important information to candidates and parties, though there are recent suggestions of concern that in certain cases – where ballot boxes contain very few votes – that this could impinge on the secrecy of individual ballots.[5] Once the sorting and initial count have been completed the quota – the number of votes needed to be elected – is calculated in line with the formula:

$$Quota = ((Valid\ poll)/(Seats + 1)) + 1$$

This is the smallest number of votes that cannot be achieved by more people than there are seats available. If no person has enough votes to be elected, the candidate with the smallest number of votes is eliminated, and each of their votes is transferred to the next preference, if one exists (e.g. to the number '2' preference). When a candidate exceeds the quota they are deemed elected and the number of votes in excess of the quota, the surplus, is transferred. Under a complete version of PR-STV a fractional value, (surplus/quota) would be applied to each vote being transferred, but this would make the count prohibitively complicated. In order to make the manual count practical a random

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[5] Tilley. 2002. Getting politics all wired up.

sample of the votes is used when transferring surplus votes, a factor that necessarily introduces imprecision into the process. In comparison to this random element, the errors introduced by mistakes in counting are minimal, due in part to the multiple cross-checks employed, as well as the rigorous external scrutiny by tally-people, though there are occasional drawn-out recounts. The extensive cross-checking, and the comprehensive paper-trail also make large scale fraud difficult.

Irish governments have been planning the introduction of electronic voting since at least the mid-1990s.[6] Interestingly, in a 1997 response to a questioner who asked whether electronic voting might "obviat[e] the need for long and difficult counts" Minister Dempsey spoke of developing a computer program that *assisted* returning officers in conducting a count, rather than a system to replace the counting process.[7] By 2002 the government had approved the use of an "electronic voting and vote counting system."[8] This process had widespread support across the political spectrum, with politicians citing recent problematic recounts and the possibility of quicker availability of results.[9] There were also occasional suggestions that electronic voting might "have the potential to make a positive contribution to promoting increased participation in the electoral process."[10] It is only in late November 2000, following the problems with the

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[6] Electronic Voting. 1996.

[7] Written Answers: Electronic Voting. 1997.

[8] Written Answers: General Election. 2002.

[9] Electoral (Amendment) Bill, 1998: Second and Subsequent Stages. 1998. , Tilley.

[10] Minister Dempsey: Other Questions: Electoral Participation Initiative. 2000.

US presidential election that the first record of concerns arise.[11] Electronic voting was first used in a number of constituencies in the 2002 election.[12] The government plans to use the system in all constituencies in next year's European and local elections.

The first obvious change in the process is the voting experience. When a voter enters the polling station, a member of the staff gives the voter a token. The voter then goes over to the voting machine and gives the token to another staff member who "activates the voting machine" for them.[13] The 'NEDAP' voting machine is a suitcase-sized unit with a number of vertical rows of buttons. Voting papers with candidate names are secured beside the buttons (each row is used for a different ballot), and voters:

> *Record their preferences on a ballot paper displayed on a voting machine by pressing the space beside the candidate's photograph. This replaces the practice of marking the ballot paper with a pencil. When the voter is satisfied with the preferences, he or she presses the Cast Vote button.*[14]

The official sees that a vote has been cast because of a signal on a control unit. Unlike with the manual voting system a blank or spoilt vote is not possible. Votes are stored, in a randomized fashion, in a removable voting module in the voting machine. At the close of the poll, the records of the ballots are copied to a back-up module in the machine. Both modules are then transferred to the counting centre where the primary

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[11] Educational Disadvantage: Electronic Voting. 2000.

[12] Electronic Voting & Counting. 2002. , Written Answers: Electronic Voting. 2001.

[13] Direct Vote Recording/Electronic Vote Counting System. 2002. 6.

[14] Written Answers: General Election.

modules are inserted in a reading slot in a programming unit, which is a desktop personal computer equipped with a mix of standard and specialized software. The votes are transferred to a database on this computer, where they are mixed, and then numbered. The modules are removed and stored securely. The programming unit then proceeds to count the votes using the standard election rules. At the present point in time, partly because legislation dictates that identical rules be used in all constituencies, a random selection of votes is used to transfer surplus votes. It is envisaged, however, that in the future the regulations, and software, might be amended to allow a full distribution system to be used.[15] Once the computer program has completed the count it displays the results.

The government rationale for the introduction of electronic voting is well summarized in a response by Minister Dempsey to a parliamentary question:

> *The move to electronic voting and counting … will make it easier for the public to vote, provide election results within a few hours of close of poll, improve the efficiency of electoral administration, support a positive image of the country in use of information technology and will help to modernise our democracy.*[16]

These reasons can be divided, if not neatly then at least broadly, into two catgories. First we have the desire to serve the public, to make the process easier for the voter. However, although this issue is also alluded to elsewhere – as when Minister Cullen referred to the importance of "ease of use" of a voting system – there is little that the process *needs* to be made easier, or at least not that electronic voting eliminates any

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[15] Electronic Voting & Counting: Your questions answered. 2002.

[16] Written Answers: Electronic Voting.

of the hurdles that may be present.[17] The voter turnout in Ireland is traditionally high – above 70% - and although this has been dropping in recent years there is no reason to believe that this is because the act of marking numbers on a ballot paper has become too strenuous an activity for voters, or that pressing buttons on a machine will attract those who would not otherwise vote.[18] However, one interesting suggestion relating to usability, from Olivia Mitchell of opposition party Fine Gael is that "perhaps the second generation, so to speak, of electronic voting could allow a person to vote at any polling station in any constituency."[19] We will see later however, that even this vein of thought generally arises out of a narrow conception of the role of the public in the political process.

The second set of reasons centre around Illich's conception of obsolescence, wherein

> *Periodic innovations in goods or tools foster the belief that anything new will be proven better."… "The "better" replaces the "good" as the fundamental normative concept.*[20]

Efficiency and speed, modernization, an image as a technologically advanced society – these all become aims in themselves, irrespective of whether they are needed to address identified problems. As Labour Party leader Pat Rabbitte has said ironically, "I

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[17] Written Answers: Electronic Voting. 2003a.

[18] MacCárthaigh. 2002. Voter Apathy and the Irish Parliament.

[19] Electoral (Amendment) Bill, 2002: Second Stage. 2002.

[20] Illich. 74-75.

do not know what was wrong with the system of voting we had, but we have to have electronic voting because we have to convey how modern we are."[21] Some politicians, seeing how quickly results are available in foreign elections, have yearned for a more efficient system in Ireland.[22] One minister described electronic voting as "a progressive and welcome modernization of our electoral process."[23] However, a more revealing remark may come from another minister, Mary Hanafin, who characterized the aim of e-government as being "to make maximum use of available technology while ensuring that citizens can still get direct access to public officials."[24] While this may seem a welcome recognition of human concerns, it should also be noted that such concerns are still seen as subsequent to the need for development – adopting technology is an aim in and of itself.

There has also been a certain, and growing, amount of criticism of the adoption of electronic voting in Ireland. In order to understand the context of the various questions that have been raised regarding the introduction of electronic voting it is useful to be aware of some of the 'essential characteristics' often associated with an electoral system. Minister Martin Cullen talks of the "key criteria of any electoral system in terms of ease

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[21] Houses of the Oireachtas Commission Bill, 2002: Second Stage (Resumed). 2002.

[22] European Parliament Elections Bill, 1996: Second Stage. 1996. , Written Answers: Electronic Voting.

[23] Adjournment Debate: Electronic Voting System. 2002.

[24] E-government must keep human link. Irish Times. 2003. 6 November.

of use, maintaining the secrecy of the ballot, accurately recording and counting votes and security" while Rebecca Mercuri notes two – privacy and auditability:[25]

> *Privacy is critical to a fair election, necessary to prevent voter coercion, intimidation, and ballot-selling. But maintaining the voter's privacy precludes the use by computer-based products of standard audit and control practices: logging transactions and identifying them from end to end.*[26]

Auditability involves being able to independently assess the security and accuracy of the system, and as such implies the importance of accuracy and security. Given the incompatibility of privacy and auditability, we can see a fundamental technical problem that has been seized on by many critics of electronic voting. Ease of use falls in a different category, and it is perhaps not surprising that it has received little attention in debate. Given the lack of empirical data readily available on the matter critics have not chosen to engage the issue. Lynn Landes notes that:

> *Voting takes three-steps: marking, casting, and counting the ballot. Only the first step should be private (although for the severely disabled that may not always be possible), but the second two steps to voting must be open to public scrutiny. That is the only way we can ensure that elections are fair and honest.*[27]

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[25] Written Answers: Electronic Voting.

[26] Mercuri. 2002. A Better Ballot Box? 46.

[27] Landes. 2003. Voting machines violate...

The early stages of the introduction of electronic voting in Ireland were uncontroversial, with little if any public debate outside of parliament, and discussion in parliament focusing on how and when electronic voting would be introduced. Then a government commissioned report by ZERFLOW consultants in late 2002 described several flaws in the proposed Irish system.[28] These revolved around security shortcomings in the system, with the report claiming that the new system opened up the voting process to several new forms of attack and subversion. Opportunities for fraud included the possibility of pasting a dummy ballot paper over the real paper, and a proven instance of the keys securing a voting machine being copied by an unauthorized person. These and other issues are situated within a technology-focused approach where purely technical solutions are thought sufficient to solve all identifiable problems with the system. Much of the criticism that has recently arisen has taken a similar technology-centered approach.

Although a Labour Party minister oversaw the early stages of the development of the electronic voting process, and some representatives initially saw electronic voting as one of several expected 'innocuous changes' in electoral law, the party has since emerged as a major source of critics of the system adopted.[29] In 2003 the party released a report

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[28] Electronic vote machines open to tampering - report. Irish Independent. 2002. 9 December. , Harnett. 2002. Electronic vote machines open to tampering - report.

[29] Electoral (Amendment) Bill 2000 [Seanad] : Report and Final Stages. 2001. , Written Answers: Electronic Voting. 1996.

prepared by a number of party volunteers that enumerated four major technical flaws in the new system:

- The lack of an integrated end-to-end test of the system.
- The fact that 'formal methods' were not used in developing the software used.
- The possibility of attacks on the central database during counting, partly as a result of the reliance on Microsoft Access.
- The possibility of tampering with the software used.

In response to these problems they make three key recommendations. The first of these is that a voter verifiable audit trail be "an essential feature of any electronic voting system to be implemented in Ireland."[30] The second is that, reflecting the fact that "it is unreasonable to expect that each individual returning/presiding officer will have the technical expertise to understand the [myriad] potential threats to the system," a central independent body should have oversight of control procedures. Finally full statistical analysis and integrated end-to-end tests are recommended before electronic voting is put into action. There are a number of other recommendations, such as that the source code and test results for the various parts of the system – specifically the IES and NEDAP – should be made available for public review. Other politicians have also raised the issue of audit trails previously, such as Richard Bruton of opposition party Fine Gael.[31]

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[30] Hogan and Cochran. 2003. Electronic voting in Ireland: a threat to democracy? 6.

[31] Written Answers: Electronic Voting.

Prior to the use of electronic voting in selected constituencies in the 2002 election one of the affected candidates, Nora Owen T.D., drew attention to a number of problems such as "poor instructions, invisible numbers and the lack of a re-check facility."[32] As it happened an additional problem, directly affecting Ms. Owen was only identified when the election actually occurred. Ms. Owen lost her seat unexpectedly, and the sudden way in which she was informed of the results, especially in contrast to the slow, progressive flow of information in the manual system, was widely seen as cruel and inappropriate. As a result a consideration is being given to releasing results of counts to politicians and the public on a staggered basis in the future – with a short delay between each of the first, second, and subsequent counts.[33]

Internationally, much of the public debate relating to electronic voting has centered on Diebold, a company that operates many election systems in the USA. While Diebold are not the company responsible for the electronic voting system, the many problems identified in relation to them, in conjunction with those of other companies, betray a pattern of shortcomings in electronic voting. Diebold's CEO has been campaigning for President Bush's reelection, and in a recent fundraiser stated his commitment "to helping Ohio deliver its electoral votes to the president next year"– a statement that has been criticized, coming from someone with such power over the

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[33] Written Answers: Electronic Voting.

operation of the election. [34] It has served, in part to awaken people to an issue described previously by Mercuri, namely that:

> *Any computerized election process is … entrusted to the small group of individuals who program, construct and maintain the machines.*[35]

Most recently there has been widespread coverage of the so-called 'Diebold memos' and legal attempts by Diebold to have them suppressed. These memos, consisting of internal Diebold correspondence, deal with various problems encountered in the operation of the system, particularly during the presidential election in the USA in 2000.[36] These documented problems, and numerous others, have prompted the growth of public debate regarding, and criticism of, the deployment of electronic voting systems in the United States. While earlier commentary, focused as it was on the problems surrounding 'hanging chads' and the like in Florida during the 2000 U.S. presidential election, embraced electronic voting as a means to remove the inequities of the current system, more recent commentary has characterized that move as at best "well-meaning but uninformed" and at worst malfeasance.[37] There is a growing recognition that:

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[34] Oakley and Oakley. The Sacramento Bee. 2003. Can America trust electronic voting? Much clout, no regulation for big firms. 23 November, 2003.

[35] Mercuri. 2001. Statement on electronic voting.

[36] Diebold CD-Wiki. 2003. , Targeting Diebold with electronic disobedience. 2003.

[37] Cringely. 2003b. No confidence vote. , Harris and Allen. 2003. Black Box Voting. Preface.

> *Any programmer can write code that displays one thing on a screen, records something else, and prints yet another result. There is no known way to ensure that this is not happening inside of a voting system.*[38]

As Mercuri points out, if there is no printout – if all the 'audit' trails are internal to the machine – then there can be no independent audit trail. This leads to Mercuri's suggestion of the so-called 'Mercuri method' for providing such a trail. These various concerns are beginning to lead to implementation of safeguards, such as a recent decision in California to require paper audit trails in voting systems.[39] However, there are still concerns that the audit trails should serve as the official ballot, and be regularly checked, rather than only coming into play in situations of active controversy. A 'National Committee for Voting Integrity' that includes Mercuri as well as other 'leading technical experts, lawyers, journalists, and citizens' has also been set up to campaign on the broad issue.[40] Diebold itself has resonded to certain analyses, claiming to be in the process of upgrading their systems to deal with identified issues.[41] However Paul Krugman has noted that in general "the Diebold affair has been treated as a technology or business

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[38] Mercuri. Statement on electronic voting.

[39] Zetter. 2003a. E-votes must leave a paper trail.

[40] Voting committee urges better standards. 2003.

[41] Diebold Election Systems Responds to Ohio Secretary of State Electronic Voting Security Assessment Reports: Ohio study reveals similar findings as Maryland review; Diebold Election Systems to quickly implement modifications. 2003.

story — not as a potential political scandal."[42] So not only is the Diebold story focused on technical questions, but these questions are not seen as issues of general concern, but rather as questions of interest to specialists – or even more notably in terms of the commercial impact of the controversy. This is not an unavoidable cast for the debate over electronic voting, as we can see from a recent French report on internet voting that clearly notes that "the specific nature of national cultures must be kept in mind since this may translate into different relationships with voting and its principles" and that "voting remains, in effect, a symbolic act, a ritual which lays the foundations for belonging to a social and political community."[43]

In the discussion that follows I rely on the theories of Ivan Illich and Jürgen Habermas. Rather than attempt to give a comprehensive overview of their theories in advance I will rather call on relevant sources as the situation demands. However, it is necessary to give a brief introduction to their approaches and how I will be making use of them. Illich's 'Tools for Conviviality' can be seen to arise out of two interwoven impulses – a technoskepticism based on a privileging of human interaction, and an apocalyptic belief in a coming crisis. As an example of the latter, Illich talks of a crisis that "confronts people with a choice between convivial tools and being crushed by machines," while the core of Illich's technoskepticism can be seen early in *Tools for Conviviality*:

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[42] Krugman. New York Times. 2003. Hack the vote. 2 December, 2003.

[43] Recommendation report: 'What is the future of electronic voting in France?' 2003.

> *"Such a society, in which modern technologies serve politically interrelated individuals rather than managers, I will call "convivial."*[44]

It is not necessary to commit to Illich's vision of crisis in order to accept his arguments for convivial tools and relations, nor do I intend to do so, leaving it rather to one side. Rather, I concentrate on Illich's concepts of 'radical monopoly' and 'obsolescence' which rely on analysis of the means by which technological processes become predominant in society, and implicate individuals in an industrialized system which becomes all-encompassing, allowing no room to opt out. In the case of voting systems I will show how electronic voting ties the voting process into other facets of the capitalist system, and some of the implications for individual and social freedom.

Jürgen Habermas is best known for his description and conception of the public sphere, but this model actually fits within a larger theory of communicative action. For Habermas our social environment can be divided into the Lifeworld – the "understandings that we share and take for granted"[45] – and systems. These in turn are associated with different types of action – respectively, communicative action and strategic action. For Habermas, communicative action is desirable, making use as it does of rational interaction as opposed to the rule-based interaction associated with strategic action and imposed by systems. Within systems "actions attain a functional value

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[44] Illich. xxiv.

[45] Warren. 1995. The self in discursive democracy. 177.

according to their contribution to the maintenance of the system."[46] Habermas suggests that citizens thus become less likely to engage in social and political action, as it serves no function within the system. Within the context of electronic voting, we can imagine how this might map to properties that would more tightly determine the manner in which political action takes place – facilitating actions that conform to expected, system-supporting forms, and dissuading other forms of action. We will see that there are, indeed, properties of the electronic voting system that follow this pattern.

The first thing to note about the debate over the introduction of electronic voting in Ireland and elsewhere is the degree to which not only proponents, but also to a large extent critics, have proceeded from a neutral conception of technology. Where electronic voting has been criticized it has largely been from a technical perspective – a belief, for example, that the lack of a paper audit trail in the system being implemented is the major, or often only identified, problem. Were certain technical fixes to be implemented these critics would be assuaged. This is not to deny other forms of criticism, but it is certainly true to say that critics have concentrated their fire on technical problems that require technical fixes, as in the Labour Party's 2003 analysis. More notable, however, is the technophilia that some proponents have evinced in their comments. For example, when government minister Mary Hanafin described the aim of e-government as being "to make maximum use of available technology while ensuring that citizens can still get direct access to public officials" she perhaps unwittingly disclosed an unwelcome bias in her

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[46] White. 1990. The Recent Work of Jurgen Habermas: Reason, Justice and Modernity. 105.

thinking.[47] In this approach the primary aim is to adopt high-technology structures, with public access acting as a secondary level, constraining, aim. This inversion - making technology an end in itself, with access an after thought – devalues human desires and action, even if some would suggest that we should be grateful that it is seen as a factor at all. It is perhaps emblematic of this that while the government boasts of the many and varied tests that have been completed on the elements of the electronic voting system, it appears that none of these actually consisted of tests of usability or utility versus the current Irish system (the only test noted is one done in Cologne, based on the German list system[48]). There have been audits of the software and hardware, to ensure they operate as specified, and more recently to check against international safety standards, but most claims for the usability of the system rely on anecdotal claims from the pilot use of the system in the 2002 general election.[49]

Such claims, apart from demonstrating the low priority accorded to usability issues in the process, are of course skewed by the sample available – those who had used the system to vote. Non-voters, or those who had avoided voting after hearing of the new system, are necessarily excluded. It is also to be noted that the three constituencies chosen included two urban – both in Dublin, Ireland's largest city – and one rural – county Meath, which borders Dublin and has a large population who commute daily to Dublin. More rural areas, many of which have older populations, were not represented in

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[47] E-government must keep human link.

[48] Tilley.

[49] Electronic Voting & Counting.

the sample. It is significant, too, that an information leaflet for the public answers the question "Why introduce this new system?" primarily by reference to the usability of the system:

> *The new system was used for the first time at the May 2002 general election and the reaction of the public was extremely positive. The system is easier to use than the traditional pencil and ballot paper and it will provide more accurate counts and earlier results.*

However, this evidence was only available *after* a decision was made to adopt the system. It was technically feasible that the adoption of electronic voting would be stopped if there was a major outcry but, given the nature of bureaucratic movement, such a move was not to be expected as a realistic possibility. It would seem appropriate, therefore, to view this response as a cynical play on what would be seen by members of the public as a reasonable rationale for introducing the new system, but not to be strongly founded on the actual reasons, whatever they may be. Illich has addressed technophilia in his description of how forced obsolescence comes about:

> *The most effective way to open a market is to identify the use of what is new as an important privilege. If this identification succeeds, the old model is devalued and the self-interest of the consumer is wedded to the ideology of never-ending and progressive consumption.*[50]

The fact that the current system does not incorporate a paper audit trail highlights an assumption that the system is infallible, that the safeguards currently employed to

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[50] Illich. 74.

facilitate recounts are not necessary where machines are involved. It is on this aspect of the issue that campaigners have begun to focus their attention.[51] At the same time however there are other pressing issues which aren't being addressed, or given as high priority, while this high-tech solution is being chased. In contrast to the technophilia of electronic voting proponents we can posit the approach of Labour TD Brian O'Shea who, speaking in 2002, argued that:

> *The conversion of the register to an electronic format would be very welcome as people's names currently disappear off registers for no apparent reason even when they have been living in an area for a long time… The process of getting on the register for the first time and of transferring votes should be simplified.*[52]

Here we see a concentration first on the needs of people, and only subsequently on what technologies could be employed to better meet these needs. We can envisage that it might be possible to develop a broad social critique that would recommend the total rejection of computing technologies, on the grounds that the gains are outweighed by the costs to society. However, without such a radical revolution, and within the context of an analysis of the electoral system, O'Shea's approach can be seen to at least rebalance the priorities. For an example of how this might be applied in practice, it is interesting to note that some disability campaigners oppose the introduction of a paper-based audit trail, on

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[51] Sheen. 2003. Computerized Voting Machines.

[52] Electoral (Amendment) Bill, 2002: Second Stage.

the basis that they believe it will be less accessible to the blind.[53] Advocates of a paper audit argue that an audio interface could be added, to allow the blind to check the paper receipt. However, it is easily imagined how this leads inexorably in a cycle of ever more complex technologies, each introducing additional sites of dissatisfaction. In a similar vein Mercuri has drawn attention to the possibility of exacerbating structural inequity through the adoption of superficially attractive off-site and internet-based voting.[54] This leads very easily to the comments of Peter Neumann, a computer scientist and leading analyst of the social application of computers, who has been largely skeptical in relation to the introduction of electronic voting. In responding to comments on electronic voting he says:

> *Why have electronic voting machines at all? GOOD QUESTION. The most compelling arguments are providing a nice voter interface and avoiding overvotes.*[55]

Neumann is talking, of course, in the context of the American voting system, as are the disability advocates cited earlier, and so the analysis is not necessarily fully applicable. However, we can see the emergence of skepticism towards the desirability of a move towards ever more technology in operating electoral systems. A similar recent sentiment can be seen in Cringely's lauding of the low-technology Canadian system:

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[53] Zetter. 2003b. Group seeks e-voting standards.

[54] Mercuri. Statement on electronic voting.

[55] Neumann. 2003. Voter-verified Breadcrumb Trail?

> *While the voting technology we have been considering is flawed, the best answer doesn't have to be some other voting technology that is somehow better. We turn to technology because it supposedly eliminates human error. I suggest that we add humans to the process in order to eliminate technological errors. And we'd save a lot of money in the process.*[56]

One reason we might wish to avoid unnecessary technology is because by introducing computerization the electoral system becomes more firmly entrenched in an expert culture. The process is beyond the understanding of the average person, and the public is further disempowered. While it is true that many people do not actually know the details of the PR-STV system, or of the manual system currently used, it is reasonably straightforward to explain the overall system,, and any specific details. Not only that but people can come to understand the operation of the system through observation, without any specialist training, and tally persons generally learn through an 'active learning' process – learning by doing.

In contrast much of the electronic voting system, while applying the previously existing PR-STV rules, operates as a 'black box' system. The government has stated their willingness to consider opening the source code of the computer system to observation (or at least those portions it has access to itself) at some point in the future, but even if this were to happen, what difference would it make for the average citizen? Written in various programming languages, and requiring specialized understanding of computers to

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[56] Cringely. 2003a. Follow the money.

interpret and critique, the system is fully accessible only to experts. The practical import that this can have is demonstrated by the case of Nebraskan Senator Hagel:

> *Former conservative radio talk-show host and now Republican U.S. Senator Chuck Hagel was the head of, and continues to own part interest in, the company that owns the company that installed, programmed, and largely ran the voting machines that were used by most of the citizens of Nebraska.*[57]

Whether or not there has been any inappropriate action by Senator Hagel or his associates, the fact remains that an assessment of the matter remains beyond the means of most members of society. Members of the public might be able to choose their own independent experts to advise them on the trustworthiness of the system, but they must still abrogate their judgment to those experts, being forced into a passive role in the process to an extent not necessary in the current system. In electronic voting the fact that I press a series of buttons and the vote is stored (somehow) on a module (in the back of the machine that I don't see) and then later (somehow) transferred to another machine, and tabulated in an Access database leaves many extra layers at which I have to trust experts, and it is more difficult to come to a decent understanding of the overall process than is the case with the current manual system. As two analysts of electronic voting in California have noted:

> *These machines are programmed with computer code far beyond the technical knowledge possessed by ourselves or any voting official we know -- computer*

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[57] Hartmann. 2003. If you want to win an election...

> *code that is indeed secret, its secrecy closely guarded as the proprietary intellectual property of the machines' manufacturers.*[58]

The need for expert knowledge can be illustrated, ironically, by the manner in which the Irish government, in the person of ministers, has claimed that the system chosen incorporates an audit trail that allows recounts. There is no reason to doubt that the Minister believed this claim, but Rebecca Mercuri has demonstrated that fully automated system of the type chosen cannot provide an independent audit, since the paper record used is generated by the very system to be audited at an intermediate stage that does not allow the veracity of that record to be ascertained. Thus the government department responsible for implementing the electronic voting system are either presuming on a lack of technical knowledge amongst the public in order to lie to them, or are themselves ignorant of the processes at play and the proper means of assessing them. In this situation we must wonder who exactly is in control when we remember Illich's warning about situations where "Social control does not accommodate community participation and becomes the function of experts."[59] More recently government supporters on a parliamentary committee voted for the full rollout of electronic voting at the 2004 elections, despite having heard evidence from several experts explaining the major flaws with the system, adding worrying credence to the former theory.[60] It is

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[58] Oakley and Oakley.

[59] Illich. 76.

[60] Gilmore. 2003. Government Bulldozing plans.

difficult to decide which alternative provides a more serious indictment of the process for introducing electronic voting to Ireland.

I entered a qualification into the government's openness to open the source code of the system because much of the system is actually outside of their control. The counting system, as noted earlier, is designed to run on a PC running Microsoft Windows, and is based on a Microsoft Access database. Reliance on such products, known as Commercial Off The Shelf (COTS), imposes certain restrictions and characteristics on a system. The electoral process becomes tied to the economic system, with the operators of the process ceding control to the rules of the market system. Thus, the electoral process that has operated for many years with essentially the same technology is now drawn into the spiral of forced obsolescence that is characteristic of contemporary commercial operations. Microsoft ceases support for older versions of Windows on a regular basis and even fiscally conservative office operations find they must upgrade computers after a short number of years.

Rather than a move to electronic voting offering a once-off solution to problems associated with the current system, therefore, it opens up a new front. Given the need to maximize use over time of the core system in order to justify the major investment made – it is estimated that it will take 15 years or more for the investment to result in net savings – those addressing problems in the future will find that their domain of action is restricted to responses within a certain sub-set of electronic voting systems.[61] It will be noticed, of course, that a similar argument was at the core of anti-trust arguments against

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[61] Tilley.

Microsoft undertaken by the US government and States, and by the European Union. The adoption of electronic voting, situating voting within a system of forced obsolescence, implicates voting itself in the reification of privilege, since as Illich notes:

> *"Product elaboration and obsolescence are two distinct dimensions of overefficiency, both of which underpin a society of hierarchically layered privilege"*[62]

A special example of this is how electronic voting is becomes part of the ongoing debate over intellectual property rights, through reference to Free Software and Open Source Software. Not only does electronic voting provide what some see as a particularly prescient example of the practical desirability of having the source-code of a system open to public review (as I have argued above, in line with the general contentions of open source software advocates). An electronic voting system is, at least in part, a proprietary product – or more precisely, a set of proprietary products. Those who have argued, with some success, for the adoption of Free Software (such as that licensed under the GNU licensing system) by national governments have done so for a mixture of practical and political/philosophical reasons, believing that it is appropriate for governments to demonstrate support for publicly-owned software, rather than propriety ones. This debate is an interesting application of Illich's concept of radical monopoly, where

> *"One industrial production process exercises an exclusive control over the satisfaction of a pressing need, and excludes nonindustrial activities from competition."*[63]

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[62] Illich. 73.

In Illich's conception, radical monopoly is linked to idea of compulsory compulsion, something that would seem very relevant here.[64] The restrictions of commercialization can be seen to act also in the core electronic voting system itself. The 'IES' system chosen has been used in Germany, the Netherlands and Ireland. As one would expect from a commercial product it is designed for maximum implementation across national and cultural boundaries. I've noted earlier that issues of usability and culture seem not to have played a part in the decision-making process – or to have been, at best, a peripheral concern. Here we should expand that observation to include a recognition of cultural diversity and autonomy, noting Illich's contention that:

> *"In the present scheme of large-scale obsolescence a few corporate centers of decision-making impose compulsory innovation on the entire society. Continued convivial reconstruction depends on the degree to which society protects the power of individuals and of communities to choose their own styles of life through effective, small-scale renewal."*[65]

One of the interesting implications of the move from a paper-based system to electronic voting is that it prevents the possibility of spoilt and blank votes. Ignoring, for the moment, the risks of flaws in the system leading to votes being lost or misallocated in new ways, we can see that this change might be problematic in a way that has not been

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[63] Ibid.Tools for conviviality. 52.

[64] Ibid.Tools for conviviality. 55.

[65] Ibid.Tools for conviviality. 73.

recognized within the public debate so far. A vote is deemed to be spoilt in Ireland if any of four situations:

1. If the ballot paper has not been stamped (this is meant to help prevent ballot stuffing).
2. If there is no clear order of preference – such as if two candidates get a '1' or if an 'x' is written beside several candidates.
3. If there is writing – other than necessary to identify an order of preference – on the ballot paper.
4. If the voter has placed no marks on the ballot paper.

In practice only a small proportion of votes are spoilt, but there is a strong argument that the disenfranchising of even one voter is something that should be avoided if possible – these are, after all, those people who have gone to the trouble of coming to the ballot station. However, if we look closely at the four ways in which a vote can be spoilt we will see that only the first two are likely to be inadvertent. The first situation is generally caused by the polling clerk neglecting to punch a paper, while the second is caused by confusion by the voter over what a valid vote is. The last two situations though, tend to result from conscious decisions by the voter. Leaving a ballot paper blank, for example, may result when a voter does not want to support any of the candidates, but has attended the ballot station either to vote in another race, or because they do not want to be counted as a presumably apathetic non-voter. Similarly, writing on ballot papers usually contains either expletives or frank expressions of disgust with the political system or a particular candidate. In one celebrated case, a puppet character – Dustin the Turkey – is reputed to have 'secured' more ballot papers than one of the three

candidates in Tallaght (a large suburb of Dublin) during the national Presidential election in 1990.[66]

While we have seen, above, that there has been some mention of ease of voting under the new system – with the fact that a voter cannot accidentally make an invalid vote able to be seen as an example of this – the self-expression involved in a deliberately spoilt ballot has been ignored. Although these votes are individually of little significance – and generally comprise a very small proportion of those cast – the opportunity for deliberately-spoilt ballots nevertheless leaves a space within the voting system for actions that are not fully determined by that system. While it would be stretching things to see this space as constituting a public sphere, given the lack of interactivity, this type of spoilt vote can be seen as a form of communicative action, as opposed to the strategic action that a vote normally comprises, being situated as it is within systemic demands. Following a Habermasian approach, then, we can see an inherent benefit in maintaining a system that leaves space for such action, as opposed to the totally rule-determined approach of electronic voting.

More generally, electronic voting can be seen as fitting into a trend of bureaucratization of, and administrative control over, the electoral and voting process. Some of the developments in this trend, such as the introduction of funding limits with associated audits of candidate spending, were instituted in response to identified socially desirable aims, such as creating an equitable and open campaign process, and so are not to be dismissed out of hand. It is noteworthy, however, that some changes were aimed

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[66] Sheahan. 1999. Louie the Lizard poll axes frogs.

primarily at creating a 'neater' electoral process – one that would impinge less on members of the public. In this category I include moves to limit canvassing outside of polling stations, and limitations on posters (some local authorities have gone so far as to attempt to ban all election-related posters within their administrative areas). While avoiding litter is a valid social goal, the prime effect of these various changes is to restrict the necessary random interactions that members of the public have with the greater electoral process, and see the casting of a ballot as the only truly necessary part of the election. While it is a non sequiter that the purpose of an election requires a ballot, the casting of an informed ballot requires exposure to debate, and this is not something on which bounds can be easily placed. Moving back to the issue of the ballot and count, it should be noted that the current count, continuing for several days, is very much a social occasion – primarily for those active in the political process, but also for members of the wider public. Members of the public will visit the counting centre for a short time, often bringing children to see 'democracy in action' and pointing out the bundles of ballot papers or prominent candidates. While some plan to do this in advance – such as those on the margins of active politics – others are prompted by media coverage of a particularly close count in progress, or a pending or potential political upset. Holding a count late at night on the evening of the vote, with no papers to view, and with results coming without warning, there will be no spectacle, and no incentive for members of the public to become, at least passively, part of the counting experience.

The social aspects of the voting process are recognized in a recent piece on 'This American Life' in which the 'quaint' lever-based system used in one American precinct is soon to be replaced by an electronic voting system that will make the tasks of the

various people present in the voting station redundant.[67] Reporter Jack Hitt begins his mini-documentary by describing his voting experience – bringing his children to the station to observe the process in action, allowing them to pull various levers – emphasizing the social experience of voting that is all so often forgotten in the attention paid to the operation of the system. Apart from the obvious appeal to the sentimentalism of tradition this argument is not something to necessarily be dismissed out of hand. As the French report we dealt with earlier notes, the very ritual of voting is part of what ties us to the political process, and so moves that deplete the social and cultural aspects of voting, refiguring the election solely as an administrative process, endanger the ties that bind us to the state that depends on, and is so closely identified with, that voting process.

A final point to address is the situation of the voting process within the greater political system. While I mentioned earlier that the adoption of electronic voting is occurring while arguably more urgent issues, such as the improvement of the electoral register, are getting little attention, I want here to concentrate here on the broader political process. In large part, electronic voting is an especially prescient example of Illich's claim that:

> *"The same general crisis that could easily lead to one-man rule, expert government, and ideological orthodoxy is also the great opportunity to reconstruct a political process in which all participate.*[68]*"*

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[67] The annoying gap between theory … and practice. 2003.

[68] Illich. 109.

Illich would argue beyond a better form of electronic voting, or even a better voting method, to a move towards a more participatory political process, concentrating less on episodic electoral contests, and more on drawing the public into ongoing debate on the issues facing society. Similarly, Habermas's concept of rational communicative action, and of the public sphere, depends upon a desire for a more active and inclusive polity. Some advocates of electronic voting look forward to a day when internet-enabled voting will allow individuals to vote from the comfort of their own home.[69] However a vision of politics based on discursive engagement of members of society must bring into question the implications of such a move. As shown earlier, and noted by the French 'recommendation report' voting is a symbolic ritual that ties voters to their society and their community. While removing barriers to access is something that must be welcomed, a process that ignores the essentially social – rather than individual – nature of voting will be irredeemably flawed.

The proposed move to an electronic voting system in Ireland is, as we have seen, problematic on a number of levels. While there has been growing coverage and disquiet concerning the technical shortcomings of the particular system chosen there has been less attention paid to social and cultural aspects of the issue. The unduly technophilic approach of various members of the government can be seen to warp their priorities, and has in turn been one of the factors impeding an adequate response to the disclosure of the serious technical deficiencies identified in the Zerflow and Labour Party reports, amongst others. However, critics too have been focused on technical fixes, resulting in conflict

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[69] Cooper. 2003. Why have electronic voting machines at all?

with disability campaigners who fear being disenfranchised by certain further technological ‘improvements’. Electronic voting can also be seen to form an instance of what Illich calls ‘radical monopoly’ with future changes being restricted to further refinements of commercially-driven electronic systems. The cultural and social aspects of the voting process are being ignored, with potential consequences for the long-term legitimacy of the electoral system.

Ó Baoill

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