Electronic Voting in Belgium: A Legitimised Choice?

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Computer voting was introduced in Belgium in 1994. Paradoxically, no action had been taken to ascertain the opinion of electors confronted with this original method of voting. This article verifies the social and empirical dimensions of legitimacy of this new method through several empirical indicators used in a survey conducted on the occasion of the federal elections of 18 May 2003: (a) how easy/difficult it was for electors to vote on a computer; (b) to what extent they trust voting on a computer; (c) if they have a philosophical/social opposition to voting on a computer.

'The King can, by decree deliberated by the Cabinet, decide that, for electoral constituencies, electoral cantons or communes that he designates, an automated voting system should be used.' The result of this provision inserted in the Belgian electoral code by the law of 11 April 1994 was the introduction of a system of computer voting in an increasing number of communes for all elections in Belgium since 1994. The system used in Belgium is distinct from Internet voting and from networked-computer voting. Voters go to the polling station where they are asked to cast a vote on computer. The aim of the system is to make voting and the counting of votes easier and quicker.

Paradoxically, this new method of voting had not yet been assessed in depth. In particular, no action had been taken to ascertain the opinion of electors confronted with this original method of voting. For this reason, on the occasion of the federal elections of 18 May 2003 in Belgium, the authors organised a major survey among voters leaving polling stations in order to ascertain the views of Belgians on electronic voting just after they had used this new voting technique (Delwit, Kulahci and Pilet, 2004). Two major questions were envisaged: (a) to what extent computer voting, as used in Belgium, is considered easy or difficult to use, and (b) whether electronic voting is accepted or rejected socially by electors who use it?

In this article, we present the results of the survey analysed in the light of the most contemporary experiences and theoretical hypotheses.

The theoretical framework

Scientific research on the use of new electronic technologies in the electoral process is particularly wide ranging in scope and is not solely the prerogative of political science. In this article, which is based firmly on a political science approach, we deal with a clearly determined problem, namely the legitimacy of new electronic



technologies as part of the electoral process and system and, therefore, of democracy.

The question of the legitimacy of new electronic technologies in the electoral process has already been studied in various research publications. For example, Auer and Von Arx have attempted to develop an ideal-type of the procedural legitimacy of e-voting insisting on criteria such as security, transparency and control of the voting process and of the counting of votes (Auer and Von Arx, 2001). The same type of research was carried out by Gritzalis (2002) and Saltman (1998) among others. Similarly, several researchers have focused their attention on the vulnerability of New Information and Communication Technologies (NICT) to hacking and viruses (Fairweather and Rogerson, 2003). Other authors have underscored the philosophical criteria (equality, fairness, secrecy, freedom) necessary for the acceptance of electronic voting and for its formal legitimacy (Watt and Birch, 2002; Birch and Watt, 2004). Yet, it is only recently that empirical political research into electronic voting has developed and is now expanding rapidly, notably the research of Shocket, Heighberger and Brown (1992), Kersting and Baldersheim (2004), Norris (2002) and Gibson (2002).

Most of this research concentrates on formal criteria needed to guarantee the formal legitimacy, the legality, of the introduction of ICTs into the electoral process. Yet, as Joseph Weiler stated, there is a complement to formal legitimacy that is social legitimacy. This latter concept 'connotes a broad empirically determined, societal acceptance of the system' (Weiler, 1999, p. 80). This article is intended to verify this social and empirical dimension of legitimacy. To do so, we need to operationalise social legitimacy through several empirical indicators. These indicators must help to measure to what extent computer voting is socially accepted by voters. In previous research led by other scholars, social acceptance was tested on the basis of three key indicators: ease versus difficulty of use; acceptance versus rejection; confidence versus mistrust. The first aspect, namely ease versus difficulty of use, was raised by surveys based on electronic voting tests carried out by the EU in Bremen and Stockholm (Cybervote, 1999), and in the UK (Independent Commission on Alternative Voting Methods, 2002; MORI, 2003). The question of acceptance versus rejection of electronic voting has occasionally been addressed. The European Union alluded to it briefly in the Stockholm test (Cybervote, 1999, p. 31). Moreover, Swiss researchers have highlighted that the vast majority of Internet users in Geneva (91.6 per cent) were in favour of the Internet (Trechsel, Mendez and Kies, 2003). Finally, the issue of confidence versus mistrust with regard to electronic voting is the one that has been the most developed, as can be seen from the public and private reports in Sweden (Election Technique 2000 Commission, 2000), the Netherlands (Ministerie van binnenland zaken, 2003), Canada (KPMG Sussex Circle, 1998), Belgium (Bourgaux, 2001), the USA (Kohno, Stubblefield, Rubin and Wallach, 2004) and the UK (Office of the Deputy Prime Minister, 2002).

In our paper, we used the same three indicators and included them in a survey carried out at the exit of the polling stations, involving 1,637 Belgian electors (18 May 2003 federal elections). After a series of questions on their social status, respondents were asked to express:

- how easy/difficult it was for them to vote on a computer;
- to what extent they trust voting on a computer;
- if they have a philosophical/social opposition to voting on a computer.

These questions were asked only to voters who used computer voting and not to those who used paper voting in order to avoid the inclusion of hypothetical opinions in our survey. The degree of social acceptance of the new voting technique was evaluated on the basis of these three indicators. In order to investigate problems of social acceptance, we looked at the degree of trust in computer voting, the degree of philosophical acceptance and the relative difficulty of voting on a computer.

Aggregating these three indicators, we decided on three possible degrees of social legitimacy in our sample:

- Degree 0 ('poor social legitimacy') corresponds to the case in which a majority of respondents (a) faced difficulties in voting on a computer, (b) mistrusted the electronic votes count, and (c) showed a strong opposition in principle to automated voting.
- Degree 1 ('wide social legitimacy') corresponds to the case in which a majority of respondents (a) declared it was easy to vote on a computer, (b) were confident in the electronic votes count, and (c) showed a weak opposition in principle to automated voting.
- Degree ¹/₂ ('moderate social legitimacy') is related to a situation in which respondents had a mixed opinion about automated voting on the three indicators (e.g. no difficulty to vote on a computer, but low confidence in the electronic votes count).

By addressing the questions of ease of use, confidence and social acceptance within our sample with regard to electronic voting, it will be possible to make an initial assessment of the social legitimacy of computer voting in Belgium. Even if we must bear in mind that the degree to which ICTs were introduced in the Belgian electoral process is limited compared to countries using Internet voting, this empirical survey is crucial to analyse voters' reactions to a new voting technique. Keeping the specificity of the Belgian situation in mind, the findings presented in this article are interesting for other forms of electronic voting (Internet voting, networked-computers etc.), as well as for phone voting, SMS voting and postal voting. The recent UK general election (2005) has shown that even the introduction of the latter voting method may be problematic.

Unlike postal voting, voting techniques using ICTs may involve some specific problems as they require at least some limited skills. Voters who are not used to the applied technology may face some problems with the new voting method. This observation led some authors to talk about a possible *digital divide*. This concept refers to the idea that the use of ICTs may reinforce the divide between different social groups: rich and poor; people with minimum qualifications and those with a high level of education; young and old (Norris, 2002, pp. 3–7; Gibson, 2002; Stratford and Stratford, 2001; Borgers, 2000). There is a danger of 'skewing the vote in favour of certain socio-demographic groups' (Coleman, 2004). Although the digital divide hypothesis refers to Internet voting, it can be extended to all

voting techniques using a technology not all voters are familiar with, including voting on a computer.

Consequently, our analysis of the social legitimacy of computer voting in Belgium in 2003 will be supplemented by a study crossing our three dependent variables (ease of use, confidence and social acceptance) with two socio-demographic variables: age and educational capital. In other words, our aim will be to verify whether those sociological variables have an effect on the way in which electronic voting is perceived by Belgian electors having voted in automated polling stations.

Computer voting: a legitimised choice?

Electronic voting: an easy way to vote?

While the question of the ease of use of computers for voting purposes was rarely addressed in studies on electronic voting, it is a key criterion for electors in their overall judgement on any method of voting. On that element, the sample used for this study expressed very few reservations with regard to difficulty of use. Almost three quarters of the respondents declared that computer voting was 'very easy' (70.13%). The positive reaction regarding the ease of voting electronically is even as high as 95.11 per cent if the 24.92 per cent of the respondents who answered 'easy' with regard to computer voting is added.

Does electronic voting inspire confidence?

The second variable studied to measure the attitude of Belgian voters to computer voting is that of confidence in the new method of voting. Clearly, the majority of the sample had confidence in automated voting. Some 88.88 per cent of the answers were positive ('full confidence' and 'overall confidence'). Only 8.5 per cent of respondents expressed mistrust, declaring either that computer voting did 'not really' or did 'not at all' inspire confidence.

If confidence clearly reigns, there are still some reservations. Although a majority of respondents (54 per cent) have total confidence in electronic voting, almost a third are less whole-hearted in their confidence (34.88 per cent). The situation therefore is different from that regarding the ease of use, where the percentage of qualified replies was far lower.

Is electronic voting socially accepted?

The last criterion selected is the social acceptance of electronic voting. This third variable is undoubtedly the most complex to interpret. With this in mind, to discover whether electronic voting posed any philosophical problems for respondents we asked whether, for them, electronic voting posed 'a major problem of principle', 'a slight problem of principle' or 'no problem of principle'.

The figures are explicit concerning the question of the social acceptance of electronic voting. The respondents affirmed by a very large majority (84.97 per cent) that the new method of voting does not pose any problem of principle to them. Only 12.34 per cent of respondents gave one of the other two answers. Therefore,

it appears clear that, from a philosophical point of view, the social acceptance of electronic voting is contested only to a very limited extent by our respondents.

In conclusion, on the basis of the survey carried out on 18 May 2003, it seems quite clear that the introduction of electronic voting in Belgium is a choice that is legitimised by the vast majority of the population. More than 80 per cent answered positively to the questions regarding ease of use, confidence and social acceptance with regard to the new method of voting. Without any doubt, the first figures show a 'Degree 1' of social legitimacy ('wide social legitimacy').

A legitimacy tarnished by a digital divide?

To examine the concern about a possible digital divide, we will analyse attitudes towards electronic voting on the basis of two socio-economic variables: age and educational capital. This way we aim to verify whether or not some groups among our respondents show a more fragile relationship with computer voting.

Attitude towards electronic voting according to respondent's age

Regarding ease of use, we have not noted a marked generational impact, though we have noted more declared ease of use among younger age groups. Due to a less 'new-technology socialised life', we expected a lower level of easiness among retired people. This expectation is partially met. Among the respondents, the 60s and over recorded the lowest scores in terms of ease of use, but the score is still quite high (89.92 per cent) (see Table 1).

On the other hand, we expected the highest score of easiness from the youngest group, in relation to more frequent use of computers. Here also, expectations are met: the figure was 98.30 per cent in the 18–29 age group. From this point of view, a possible digital divide related to age exists but in a (very) blended tone.

Regarding confidence in the new method of voting (first column – 'total confidence'), we could assume that the older the respondent the less confidence in computer voting. For example, in the 18–29 age group, 57.66 per cent declared that they had total confidence in computer voting, compared with only 48.11 per cent in the 50–59 age group (see Table 2).

	Very easy %	Easy %	Difficult %	Very difficult %	No opinion %
18–29	77.40	20.90	1.41	0.28	0.00
30–39	79.23	18.53	1.60	0.32	0.32
40-49	76.62	19.42	2.88	0.36	0.72
50-59	71.49	25.21	2.07	1.24	0.00
60 and over	53.62	36.20	6.79	2.49	0.90

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	Fully Confident %	Rather Confident %	Less Confident %	Not at all Confident %	No opinion %
18–29	57.66	29.73	6.98	4.05	1.58
30-39	58.33	30.42	4.17	4.17	2.92
40-49	57.55	30.58	2.52	6.47	2.88
50-59	48.11	42.45	4.09	2.20	3.14
60 and over	50.14	40.35	4.61	1.73	3.17

Table 2: Age and confidence in computer voting

However, this does not show the full picture. In fact, a more global analysis reveals that the percentage of those that mistrust electronic voting falls with age, since the confidence of older respondents is more frequently qualified. In other words, confidence in computer voting increases very slightly with age, but it is also expressed in a less clear-cut way. In total, 90.49 per cent of the 60 and over age group expressed their confidence in computer voting compared with 87.39 per cent among the under 30s.

Finally, regarding social acceptance, the assumption whereby the relationship with electronic voting becomes more fragile with age is not confirmed by the opinions expressed in our sample of Belgian voters. The percentages of answers differ slightly between the age groups on this question. The percentage (electronic voting 'does not pose any problem of principle for you') is between 81.53 per cent and 89.36 per cent in all age groups. In addition, when slight differences are observed, they are not linearly related to the respondent's age. Thus, the lowest percentages of respondents declaring that computer voting poses 'a major problem of principle' are found in the two extreme age groups (18–29 and over 60).

Attitude to electronic voting according to respondent's educational capital

The second independent variable used to check whether certain categories of the population encounter more difficulties with regard to electronic voting is the educational capital of the respondents. Having observed that the more highly educated respondents are those showing a stronger familiarity with computers, it is plausible to expect fewer problems regarding the new method of voting among respondents possessing higher qualifications (see Table 3).

Concerning the declared ease of use of electronic voting, we observed a meaningful positive relationship with educational capital. Looking at both the frequency of 'very easy' answers and the sum of the 'very easy' and 'easy' answers, there is a significant increase according to educational capital. Of respondents with a weak educational capital 90.12 per cent declared a positive opinion (79.63 per cent of the electors interviewed were without any educational qualification). That figure

Table 3: Educational capital and ease of use of computer voting

	Very easy %	Easy %	Difficult %	Very difficult %
Weak level of educational capital	57.18	33.94	6.27	2.61
Medium level of educational capital	73.01	23.72	2.45	0.82
Strong level of educational capital	79.14	19.71	1.15	0.00

Note: Educational capital is measured on the basis of the highest diploma that the respondent declared that he or she obtained.

Table 4: Educational capital, ease of use and confidence in computer voting

	Easiness		Difficulty	
	Confidence %	Mistrust %	Confidence %	Mistrust %
Weak level of educational capital	89.88	10.12	64.71	35.29
Middle level of educational capital	93.01	6.99	68.75	31.25
Strong level of educational capital	93.78	6.22	SNS	SNS

Notes: Answer to the question: 'Are you confident in computer voting ...'. SNS: statistically non-significant.

increases according to educational capital and reaches its highest point among holders of a strong level of educational capital (98.85 per cent). Even if the positive scores remain high irrespective of educational capital, we can assert that people with the lowest educational capital encountered more difficulties in using the new method of voting (see Table 4).

A positive link between educational capital and attitude towards electronic voting is confirmed by the question of confidence. Furthermore, we can also see the relationship between ease of use and confidence. In other words, a weak level of educational capital tends to increase two related indicators: difficulty and mistrust in computer voting. So, the highest level of mistrust can be found among people with weak educational capital and who encountered difficulties in voting by computer (35.29 per cent). It is still a minority, but the proportion is in this case far from being marginal.

Finally, regarding the question of social acceptance of computer voting, the breakdown of answers by level of education is rather special (see Table 5). It confirms the relationship with confidence pointed out in Table 4. Difficulty and weak level of educational capital reinforce the reservations concerning computer voting. Social acceptance is at its weakest point among people with weak educational capital and who experienced difficulties using the computer to vote on 18 May 2003: only 40.63 per cent of this category experienced no problem of principle in voting this way, while 59.38 per cent experienced either a slight or a major problem of principle.

It is also important to point out another interesting phenomenon. Irrespective of the highest diploma obtained and (great) easiness to vote, some highly educated people expressed a (small) philosophical opposition to computer voting. And so, from a general point of view, what is important to pinpoint is that social acceptance is at the lowest point at the two extremes in terms of educational qualifications. Among less educated people, we see the relationship between ease of use and (lack of) confidence. Among the best educated people, social acceptance is independent of ease of use and partially related to confidence (see Table 6). If the majority of respondents having a slight problem of principle towards computer voting (82.61 per cent) are confident, this confidence is more moderate than in the 'no problem of principle' group.

In conclusion, analysis of the link between educational qualifications and attitude to computer voting is what confirms that a positive attitude towards computer voting is shared by most respondents. Yet, some sections of the population have a more fragile relationship with the new method of voting. It appears that a significant proportion of interviewed electors with a low level of educational qualifications experience less ease of use. Such difficulties boost mistrust and social defiance in electronic voting. That link is less obvious regarding social acceptance. This also suggests the existence of a small digital divide. This is not striking, but we have to keep in mind that the standard procedure for voting appears to be quite simple in Belgium, in comparison with other countries using Internet voting.

Conclusion

The introduction of computer voting in Belgium is at a turning point. After an initial test phase it is now time to extend this new method of voting progressively to an increasing number of communes. In order to measure to what extent such a choice is justified, the task of political science is to take stock and assess the impact of electronic voting on the democratic process. In that context, the aim of this article was to examine the social legitimacy of the use of an electronic technology in the electoral process from an empirical point of view. Starting from a survey conducted on the occasion of the Belgian federal election of 18 May 2003 (n = 1,637 electors), we examined the question of the attitude of electors towards computer voting.

To that end, three questions were asked to measure the opinion of Belgian electors on computer voting, namely ease of use, confidence and the social acceptance of electronic voting. On the basis of these three indicators we looked for three

Table 5: Educational capital, ease of use and social acceptance of computer voting

	Major problem of principle %	21.88	16.67	SNS
Difficulty	Slight problem of principle %	37.50	25.00	SNS
	No problem of principle %	40.63	58.33	SNS
	Major problem of principle %	2.40	3.02	3.83
Easiness	Slight problem of principle %	6.59	5.83	9.28
	No problem of principle %	91.02	91.14	86.89
		Weak level of	educaŭonal capital Middle level of	euucauona capual Strong level of educational capital

Notes: Answer to the question 'Electronic voting poses me ...'. SNS: Statistically non-significant.

	Strongly confident %	Rather Confident %	Slight lack of confidence %	Strong lack of confidence %
No problem of principle	64.44	33.16	1.20	1.20
Slight problem of principle	17.39	65.22	13.04	4.35
Major problem of principle	3.70	25.93	40.74	29.63

Table 6: Social acceptance and confidence among highly educated people

possible degrees of social legitimacy ('wide social legitimacy', 'poor social legitimacy' and 'moderate social legitimacy'). Among our sample, some 95.11 per cent of respondents declared that they found this new method of voting 'very easy' or 'easy', while 88.88 per cent of them expressed their confidence in electronic voting. Finally, 84.97 per cent declared that they had 'no problem of principle' with regard to computer voting. Those figures lead us to conclude that there is a 'wide social legitimacy' of automated voting in Belgium (degree 1).

However, inspired by the research carried out by Norris (2002) and Gibson (2002), we considered that it was important to assess whether this positive response was valid for all segments of society. To that end, we have tried to verify whether respondents held different opinions on computer voting according to their age and educational capital, considering that older respondents and those with lower education capital might not be familiar with the use of a computer.

In this respect, the first lesson is that, irrespective of the age or level of education of respondents, the percentage of individuals at odds with computer voting is quite low. This first observation applies moreover to all of our three indicators, namely ease of use, confidence and social acceptance. In conclusion, analysis of the social legitimacy of computer voting in Belgium could end on this positive assessment. However, the principles of equality between voters and fair elections raised by Watt and Birch (2002) remind us that in order to be democratic, elections must enable all electors without exception to vote freely and correctly. Consequently, even if a large majority expressed a positive opinion on the new method of voting, the principle of equality cannot tolerate any exceptions. That is the necessary condition for computer voting to benefit not only from social legitimacy but also to ensure its formal legitimacy. It is therefore necessary to pay special attention to those having a more fragile relationship with computer voting, even if they represent a small minority. For example, it is worth emphasising that 20.37 per cent of electors without any educational qualifications consider that computer voting is 'difficult' or 'very difficult'. There is a digital divide to take into account, even if it is not striking.

Notes

- 1 Loi du 11 avril 1994 organisant le vote automatisé, article 1^{er}.
- 2 Computer voting was first tested in Belgium in only two electoral counties for the 1991 national elections. From that point on, it was extended to more and more counties. In 2003, 44 per cent of all Belgian voters cast their vote on a computer.
- 3 In Belgium, this method is often referred to as 'electronic voting' or 'automated voting', as opposed to paper voting.

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