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# Elections in the 21st Century: from paper ballot to e-voting

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The Independent Commission on  
Alternative Voting Methods

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## Membership of the Independent Commission on Alternative Voting Methods

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**Steven Lake**, Director (Policy & External Affairs) of the Association of Electoral Administrators, and Electoral Registration Officer for South Oxfordshire District Council

**Gerald Shamash**, Solicitor: Electoral Lawyer to the Labour Party

The first Chair of the Commission, **Keith Hathaway**, resigned in June 2000 when he retired as Chair of the Association of Electoral Administrators and became involved in election monitoring and supervision missions overseas. Sadly, we lost to ill health our esteemed colleague, **George Smith**, Chair of the Association of Electoral Administrators. A third former Commissioner, **Joe Wadsworth**, of Electoral Reform Services, resigned to avoid any conflict of interests when that company entered into partnership with an online voting vendor. Peter Facey joined the Commission to replace Keith Hathaway and Steve Lake replaced George Smith.

The Commission has been extremely well served by its clerk, **Rebecca Williams**, who has been supported by research assistance from **Simon Collingwood** and **David Pepper**.

The Commission was established by the Electoral Reform Society, and is grateful to them for hosting our meetings.

The Electoral Reform Society is very grateful to the members of the Independent Commission for the time which they have so freely given and for their commitment to the development of good electoral practices in the UK. The Society, which has since 1884 been campaigning for the strengthening of democracy (although principally through reform of the voting system), believes that the Commission's report is a major contribution to the debate on the modernisation of the way we vote and that the report should guide the development of policy and practice in this area in the coming years.

Although the Independent Commission was established by the Electoral Reform Society and has been serviced and supported by it, the Society has not sought to influence the Commission's work. The views expressed in the Commission's report therefore do not necessarily represent the views of the Society and, similarly, neither the Commission as a body nor its members individually necessarily support all of the policies of the Society.

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## Terms of reference

**The Commission shall look into new methods of voting and related matters and draw up recommendations that will ensure that both the security and secrecy of the ballot are maintained and to ensure continued public confidence in the electoral process.**

**1. By electronic voting we mean all forms of electronic or mechanical equipment for assisting in the counting of votes, e.g.**

- a) the mechanical and/or electronic counting, or sorting and counting, of ballot papers;
- b) computer programs to assist returning officers with calculations and in the production of results sheets;
- c) equipment by which voters enter their votes on a console rather than using a ballot paper, and computer disks, or the equivalent, take the place of ballot boxes;
- d) systems in which registers are online and which allow voters to vote at any polling station;
- e) telephone voting;
- f) internet voting;
- g) universal postal voting.

**2. The Commission should consider each form of electronic voting, looking at:**

- a) the state of the art technology;
- b) its existing use, in the UK or internationally;
- c) the ease of voting and risks of votes being wrongly cast;

- d) the safeguards required against voter impersonation;
- e) transparency and the facility with which candidates and their agents can ensure that there has been no malpractice;
- f) whether there is any place/need for recounts with the different systems;
- g) the ease and speed of counting;
- h) risks and consequences of mechanical failure, power cuts, etc.;
- i) danger of tampering, e.g. by technical staff or hackers;
- j) possible biases which might be introduced by differential access to the voting system, e.g. by those with telephones or internet access;
- k) any implications for turnouts;
- l) advantages which might be offered for more complex forms of vote counting (e.g. STV);
- m) approximate costs of implementation (and savings over manual counting).
- n) data protection problems.

**3 The Commission should produce:**

- a) guidelines for the safeguards required to preserve the integrity of the election with each form of electronic voting;
- b) recommendations on how far and how fast the Government should move in introducing electronic voting.

# Preface

## Democracy and Participation

A democracy in which the public does not participate is in trouble. Falling turnout at elections is a worry for all of us, because we know that voting is the most basic act of democratic participation; people who do not vote tend not to participate in other civic activities. It is not the job of the Commission to tell people that they should vote. We respect those who choose to abstain. But we are concerned to promote public participation in democratic life. It is beyond the remit of this report or this Commission to consider matters other than alternative methods of casting and counting votes, but we are strongly in favour of attempts to reinvigorate public participation, whether through the teaching of democratic citizenship in schools, the work of the Electoral Commission or the Government's developing interest in e-democracy.

Our work began before the 2001 election, in the shadow of the 71.3% voter turnout in 1997 – the worst since 1935. In 2001 voter turnout fell by a staggering 12 percent, leaving us in no doubt that the democratic process in the UK is indeed in trouble. Three out of four 18-24 year-olds did not cast a vote in 2001. Historically, voting is associated with higher levels of affluence and education; so, it is particularly disturbing to observe that, as the population as a whole has become progressively more affluent and educated in recent years, voting levels have declined. It would be simplistic and naive to imagine that new methods of voting could redress this drift, unless they were part of a much broader revitalisation of democratic life. So, any recommendations made here must be considered in the context of an agenda for making democracy more accessible and

meaningful to citizens. This report is therefore offered as a contribution to a wider commitment to nourish and energise democratic life in Britain.

## Do Methods Matter?

Superficially, it would not seem to be the case that the public cares very much about *how* they cast their votes. If voting in elections were abolished or limited tomorrow there would be a huge public outcry, but we doubt very much whether many people are much bothered by how votes are cast or counted. On the other hand, the public, in a number of recent opinion polls and surveys, have stated that current voting methods are inconvenient. People are becoming used to conducting their transactions in flexible ways – by post, phone, in the street or supermarket, and increasingly at home via email and the web – and the burden of walking to a polling station to cast a vote could seem anachronistic. We cannot be sure that all those who cite inconvenience as their reason for non-voting are telling the whole truth; maybe it is easier to blame voting procedures than to admit to inertia or apathy. Critics of the convenience argument say that there is a civic obligation to vote and that those who cannot even be bothered to walk to a nearby polling station are simply irresponsible. Such a view fails to recognise the logistical complications of modern lifestyles.

Whatever the arguments for and against making it easier for people to vote, we are convinced that culture is more important than convenience and that politics is a greater motive for voting than procedures. In short, people vote when they feel that there is something worth voting about and that their votes count. It is up to the parties and candidates, in their campaigning, to provide such incentives; where they do, people will vote, even if

it is not very convenient; where they fail to do this, people will not vote, even if the easiest voting technologies are available to them. Voting is a political act, not merely a procedural one. That does not mean that voting methods need not be considered; as long as a single person who is motivated to participate in an election is prevented from doing so because the method on offer is inconvenient there is a need to address the questions raised in this report.

## Assessing Risk

We live in a world of risks. Just as personal health, air and road transport or commercial transactions are prone to risks and newly-perceived dangers, so is democracy. But, unlike most other risks that face us, democracy is a truly collective good: we all need it to work well. The public can only be expected to have confidence in the electoral system if it is based upon transparently fair and robust procedures and working methods. One could argue that public confidence in our current voting methods is not well founded; certainly, the current system is more open to fraud than many believe. Voters in the 2000 US presidential election discovered much about their electoral procedures which undermined their previous confidence. One thing is certain: public confidence in democratic elections takes decades to develop and far less time to destroy.

Dealing with risk is not a matter of eliminating all uncertainties, but of setting clear limits upon the scope for accidents, attacks and errors. In thinking about voting methods, we need to decide how much risk is acceptable. For example, let us imagine that there is a method of voting that is likely to result in higher voter turnout than current methods, but at greater risk to the probity, accuracy or security of the electoral process. Should it be accepted or rejected? The answer does not lie in an absolutist rejection of risk, but a clear policy about where on the spectrum of risks one decides to draw a line. The Commission has spent much time over the past eighteen months trying to draw such lines.

## The Commission: Purpose and Principles

The Independent Commission on Alternative Voting Methods was established to examine,

analyse and offer recommendations about a range of possible methods for casting and counting votes in UK elections. We have been motivated throughout by a keen awareness of the need for democratic practices to evolve and improve, but also a commitment to resisting changes which would fail to win public confidence or meet the highest democratic standards. The probity, accuracy and security of electoral arrangements are integral to the vitality and credibility of democracy. Everything in the following pages is intended to reflect that principle.

As its name suggests, the Commission is a totally independent body, with no ties to external institutions or organisations. In the course of our deliberations, we have had discussions with Government, and have been invited to submit our findings to them; however rather than seeking to set out a policy for Government, we have produced a set of principles and recommendations upon which we would wish to see such policy based. We have been pleased to take evidence from vendors of election machinery and software; however we have treated this critically and have no ties to such corporate interests. In all of our investigations over the past year and a half, and in the writing of this report, the Commission has acted in an independent and principled way and should be judged in these terms.

I have been privileged to chair this Commission and learn an enormous amount from my fellow Commissioners, as well as those who gave evidence to us.

In examining alternative voting methods, we have constantly kept in mind that any increase, or perceived opportunity for increase, in electoral fraud or malpractice would damage the integrity of the electoral process, the trust of the public and the legitimacy of our elected representatives. We set out ten key criteria which we applied to all methods of voting that we considered:

**Security** – protection against voter impersonation or tampering

**Secrecy** – protection against undue influence or traceability of votes other than by court order

**Ease of voting and risk of mistakes** – voting should be convenient, but also foolproof

**Transparency** – opportunities for scrutiny throughout the process

**Speed and efficiency of counting** – having been cast, the counting of votes should not be delayed or made less trustworthy

**Accuracy of results** – voters deserve an accurate count

**Effects on turnout** – the maximum number of eligible voters should be encouraged to cast their votes, but not at the expense of differential access

**Cost** – the process must be affordable and adequately funded

The Commission welcomes the fact that the Government has set in motion the process of examining and piloting alternative voting methods. It is important that these are independently evaluated and we would suggest that the criteria outlined in this report would be appropriate for such studies. Using evidence from places where alternative methods have already been used, this report makes recommendations about the speed and degree to which the Commission believes the Government should be moving forward with various new forms of voting. These recommendations are accompanied by guidelines for the safeguards that the Commission believes need to be in place to preserve the democratic integrity of the electoral process.

**Dr Stephen Coleman**

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# Executive Summary

The Independent Commission on Alternative Voting Methods welcomes the current climate of investigation into renewing the electoral and broader democratic processes of the United Kingdom. One part of this agenda is the piloting and possible further extension of new voting methods, and as part of an attempt to address disengagement from the political process we view these as positive developments. However, any change can bring with it suspicion and uncertainty, and it is vital that changes to our electoral process do not render that process more vulnerable, and do not undermine voters' confidence in the system.

It is not only the mechanics of the systems themselves, but also the way in which they are implemented which affects the confidence of voters, and the efficiency and effectiveness of the whole process. Recent elections in the United Kingdom have been characterised by the introduction of last minute legislation, insufficient funding and insufficient time for preparation and the testing and validation of equipment. Nothing will cause a greater loss of confidence than for systems to be introduced without this work being properly carried out.

**Elections in the 21st Century: from ballot paper to e-voting** examines five alternative voting methods. These are listed below along with a summary of our conclusions and recommendations. The full conclusions and recommendations on each method are at the end of each chapter:

## **(Universal) Postal Voting**

The increased use of postal voting, whether on demand or universal, offers increased convenience to the voter and therefore has the potential to increase turnout at a manageable cost. Access is equal to all.

Problems arise however, with regard to the identity of the individual casting the vote and the secrecy in which the vote is cast. Postal voting does not make voting any more user-friendly or vote-counting any more efficient or accurate.

The Commission recommends:

- that further pilots take place in local elections, European Parliamentary elections and Parliamentary by-elections, across a whole authority, electoral region or constituency respectively, and also in parish and community council elections
- that voters be required to provide their dates of birth (both at registration and in completing the postal vote) in order to avoid personation; otherwise, that Declarations of Identity be retained
- the introduction of a marked register for postal votes, so as to maintain a record of postal voters whose votes were returned and allow checks to be made on whether a vote has been cast in the name of, for example, a recently deceased elector
- that postal voters who have not received their papers and do not have time to be issued with replacements, be allowed to attend a polling station and cast a tendered ballot, so as not to be totally disenfranchised
- that postal voters be made fully aware of the timetable for issuing postal ballots
- that consideration be given to the arrangements for the delivery and return of postal votes

## Electronic Counting

The main area in which electronic counting can be beneficial is in increasing the speed and accuracy of the count. However, it does so at considerable cost.

Since this kind of technology affects the counting of votes, rather than the voting itself, it will not have any effect on turnout or increase the user-friendliness of the voting process. Opportunities for scrutiny are somewhat reduced, though a paper audit trail is retained.

The Commission recommends:

- that if such technology is introduced, it should be at polling station level, rather than at a central count; this would allow the inadvertent spoiling of ballot papers to be avoided
- that recounts must be available and that the nature of the recount (electronic or manual) must be governed by fixed, publicised rules
- that rigorous and realistic testing of software and hardware be carried out in situ by the Returning Officer, with candidates and agents given the opportunity to be present

## Electronic Machine Voting

As a polling-station based technology, electronic machine voting would not offer any benefits in terms of voter turnout, but equally would not raise any problems of differential access.

Electronic machine voting could make the voting experience more user-friendly by warning people before they cast a spoiled ballot, and by providing voting formats that allow voters with visual and hearing impairments to cast their votes unassisted. Increased speed and accuracy of counting would also be a benefit.

The introduction of this kind of technology would be extremely costly. Opportunities for scrutiny would be substantially reduced, and there would not be a paper audit trail in the traditional sense.

The Commission recommends:

- that further pilots take place at any level of public election (including Parliamentary by-elections), except at a General Election
- that the equipment used be specifically election-dedicated voting equipment
- that rigorous and realistic testing of software and hardware be carried out in situ by the Returning Officer, with candidates and agents given the opportunity to be present; test modes should not be allowed and the test votes should be entered by hand, not as pre-prepared data
- that voting data be recorded and stored in duplicate in case of damage to data
- that voting machines be programmed to allow voters to cast a blank ballot, but that voters be warned before doing so
- that voting machines log all events, by voters and administrators
- that the security of the machines and cartridges be as high as ballot paper security
- that percentage turnout by polling station be made available on request to candidates and their agents during election day
- that a detailed breakdown of voting by polling station be made available to candidates and their agents as soon as possible after the declaration of the result
- that the election data be made available to a court, in the case of a challenge to the result

## Telephone voting

Telephone voting offers increased convenience to the voter and therefore has the potential to increase turnout at a manageable cost. Voters could be prevented from inadvertently spoiling their vote, and vote-counting could be much quicker and more accurate than at present.

Problems arise however, with regard to the identity of the individual casting the vote and the secrecy in which the vote is cast.

Opportunities for scrutiny would be substantially reduced, and there would not be a paper audit trail in the traditional sense.

The Commission recommends:

- that further pilots take place, but that these initially avoid combined elections and elections with more than three vacancies
- the introduction of Elector Cards in conjunction with PINs to avoid personation; otherwise to require voters to use their date of birth along with a PIN
- that the voter's identity be stripped from the vote and stored separately, and that no individual or individual agency should have the capacity to match the two sets of records; the two sets of records should only be matched if a court order requires such action to be taken
- that all telephone calls from within the United Kingdom be free of charge
- that PINs be randomly generated
- that buying or selling PINs be made an offence and that the penalties be widely publicised
- that the interactive voice system be as user-friendly as possible and offer the possibility of having the instructions and options repeated at any stage; voters must be given the opportunity to review their choices before confirming their vote
- that there be sufficient telephone lines that at no point do electors have difficulty getting through to the voting system
- that the system should log all aspects of the call
- that voters be allowed to cast a blank ballot, but that they be warned before doing so

- that voters who have not received their security information and do not have time to be issued with replacements, be allowed to attend a polling station and cast a tendered ballot, so as not to be totally disenfranchised
- that a detailed breakdown of voting by the smallest appropriate polling division (equivalent to a polling station) be made available to candidates and their agents as soon as possible after the declaration of the result
- that the election data be made available to a court, in the case of a challenge to the result

### Online voting

Online voting offers increased convenience to the voter and therefore has the potential to increase turnout. Voters could be prevented from inadvertently spoiling their vote, and vote-counting could be much quicker and more accurate than at present.

Problems arise however, with regard to the identity of the individual casting the vote and the secrecy in which the vote is cast. Differential access to online technology would be a serious issue.

Opportunities for scrutiny would be substantially reduced, and opportunities of external attack would be significantly increased, particularly in view of the vulnerability of personal computers. There would not be a paper audit trail in the traditional sense.

The Commission recommends:

- that a Technology Taskforce be established prior to any pilots in order to evaluate and challenge the system
- that electors who already have a digital certificate and the necessary software be allowed to use them as a form of voter authentication
- that electors have the option of being issued with an Elector Card by their local authority to be used in conjunction with a PIN; otherwise that voters be required to use their date of birth in conjunction with a PIN

- that the voter's identity be stripped from the vote and stored separately, and that no individual or individual agency should have the capacity to match the two sets of records; the two sets of records should only be matched if a court order requires such action to be taken
- that PINs be randomly generated
- that buying or selling PINs be made an offence and that the penalties be widely publicised
- that there be sufficient servers with adequate capacity that at no point do electors have difficulty getting through to the voting system
- that voters be allowed to cast a blank ballot, but that they be warned before doing so
- that voters who have not received their security information and do not have time to be issued with replacements, be allowed to attend a polling station and cast a tendered ballot, so as not to be totally disenfranchised
- that a detailed breakdown of voting by the smallest appropriate polling division (equivalent to a polling station) be made available to candidates and their agents as soon as possible after the declaration of the result
- that the election data be made available to a court, in the case of a challenge to the result

# Overall Recommendations

**The Independent Commission on Alternative Voting Methods makes the following recommendations in addition to those referring to specific voting methods contained in the individual chapters that follow. These recommendations apply to the introduction of any new voting methods.**

1. We recommend pilots in the use of Elector Cards in conjunction with postal, telephone or online voting.
2. We recommend pilots in electoral registration which provide for more secure methods of voting. Subject to approval from the Data Protection Commissioner; these would gather electors' dates of birth which could be used to enhance the security of all forms of remote voting.
3. Any pilots using new voting methods must be formally assessed by an independent body rather than by those involved in the conduct of the election. Specific criteria must be laid down for the assessment of such pilots.
4. In order to build confidence amongst voters, an information campaign must be a central part of the introduction of new voting methods.
5. With the exception of all-postal elections, we recommend that a multiplicity of voting methods be maintained for the foreseeable future.
6. The Electoral Commission should have responsibility for:
  - a) the validation to the highest international standards of any hardware and software used in the electoral process
  - b) putting standards in place for the testing and certification of software and hardware at all stages of the electoral process; returning officers should be party to testing at certain stages, and candidates and their agents should also have the option to be present
  - c) oversight of the use and validation of any barcodes used in the electoral process
  - d) the standardisation of contracts with companies providing equipment
7. Sufficient time must be allowed for any necessary legislative processes to fully take their course before implementation of the new voting methods begins.
8. It is not possible to run effective elections without adequate resources. Since costs will inevitably be incurred in the introduction of new voting methods, we urge the Government to dedicate sufficient funds to implementing any changes.
9. Sufficient time must be available for detailed planning, to include areas such as training and a detailed rehearsal for all staff; a back-up plan in case of power-failure; briefings for all key participants (e.g. candidates and their agents, media etc).

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