Electronic engagement

Promise and perils of electronic public engagement

Gene Rowe and John G Gammack

There is currently a trend in democratic societies towards greater involvement of the public in the policy setting of official bodies. Numerous mechanisms have been developed to enable such involvement, ranging from traditional forms, such as the public meeting, to more novel forms, such as the consensus conference. This paper considers the use of modern technologies, particularly computer, or internet-based, as the structural basis of novel engagement mechanisms. To many sponsors of engagement exercises, such technologies appear to provide solutions to specific public engagement problems. In this paper, however, we argue that a number of potential perils also await those who would use these technologies. We conclude with a call for more research into the effectiveness of technology-based engagement mechanisms.

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IN DEMOCRATIC SOCIETIES throughout the world there is a significant movement towards increasing the degree of public involvement in governance and policy making at both national and local levels. Traditionally, involvement has been achieved through the use of mechanisms such as the public meeting/hearing and the public survey/opinion poll.

More recently, however, advances in technology, particularly associated with the development of the Internet and other computer-based platforms, have provided new opportunities for involving the public through mechanisms such as electronic consultations and virtual focus groups. Hopes for these modern solutions in the public engagement community are clearly high, as evidenced by, for example, a shift in UK Government policy towards use of this medium in its public dealings (referred to as 'e-government').

A number of potential pitfalls exist, however, that may militate against technological solutions to involvement problems, as revealed in the literature on human–computer interactions and in similar research domains. Much of this research is evidently unfamiliar to public engagement researchers and practitioners. In this paper, we aim to summarise the key findings from past research in these computer-related areas, and draw implications from these results for the potential promise — and perils — of technology use in the involvement domain.

Public involvement: concepts and trends

The dominant model of governance in most democratic societies today entails policy making by elected officials with the help of unelected experts and

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advisors (for instance, Jasanoff, 1990; Kiernan, 2000). In this model, the general public, having fulfilled its duty at election time, is rarely bothered further. Over recent decades, however, and with seemingly increasing momentum, this model has been challenged by one in which the public is viewed as having greater responsibility for, and a larger role to play in, policy setting.

The reasons behind this shift towards greater public involvement are numerous and complex. They range from the ideological, that argues that direct public participation should be a requisite of a truly democratic society, to the pragmatic, that points out that a non-involved public may be an angry, or uncooperative, or untrusting one (for instance, Fiorino, 1990; Sjoberg, 2001). Greater public involvement is even seen by some writers as something of an antidote to a perceived crisis in trust of the public in policy makers (for instance, Ravetz, 2001). Similarly, with regard to the issue of public understanding of science, the current president of the Royal Society recently noted that "trust in science and policy can only be won among the public if scientists engage in two-way communication with them" (Pockley, 2001).

The relationship of 'trust' to 'involvement' is, however, a complex one: trust is not only a (potential) desired outcome of involvement, but also a potential factor influencing willingness to be involved in the first place. Hibbing and Theiss-Morse (2001) surveyed US citizens' willingness to participate in political processes and found that there was more incentive to participate when the government was *not* trusted (the repair theory), than when it was (the reward theory). One implication of this is that the public prefers not to participate, but rather to accept the decisions of an expert polity they can trust (a sort of management-oriented mentality). If better, more acceptable decisions are made, however, through healthy debate or general deliberation within and

between diverse and representative groups, this goes towards the original deep ideals of democracy (Hibbing and Theiss-Morse, 2002).

Perhaps one of the most significant rationales for persevering with the present, expert-based model is the supposed knowledge deficiency of the public. This, however, is countered in much recent research and writing by the argument that, in many practical cases, policy recommendations are made by experts in situations of non-perfect knowledge based on the values and beliefs of those experts. If decisions are to be made, and policy set, on the basis of value judgments, the argument goes, then surely the values should be those of the affected public rather than an unelected élite (for instance, Jasanoff, 1990; 1997; Pollak, 1996; Sjoberg, 2001).

Responses to calls for public involvement

Responses to the momentum for increased public involvement have varied in quality, quantity and style, across different democratic societies. Some nations possess a more consensual, involving style than others: in Switzerland, for example, national and local referenda are relatively common, and may be initiated by any member of the public on almost any issue on which a certain number of supporting signatures can be amassed (Elazar, 1995).

As another example, in the UK (which possesses a less notable involvement culture), a number of major recent policy decisions appear to reflect this trend, ranging from the devolution of power to the regions and the institution of national assemblies for Scotland and Wales, to the setting up of new agencies to take greater heed of public/consumer concerns (for instance, the Food Standards Agency, see Krebs, 2001), to the co-option of public representatives into new advisory bodies, and the inclusion of commitments to consult the public in their terms of reference (for instance, the Agriculture and Environment Biotechnology Commission (AEBC) and Human Genetics Commission (HGC)).¹

At the local level, Bickerstaff and Walker (2001) note that community participation is embedded in the philosophy of Local Agenda 21, and they discuss the extent of public involvement in local transport planning in the UK. Elsewhere, the Council of Europe (2001) recently adopted a recommendation on citizen participation in local public life, proposing consequential actions for member states.

Australia also has a number of well-advanced initiatives in community engagement at both national and local levels, and provides a prime example of such an initiative. The state government of Queensland has made a ground-breaking commitment to increase public involvement in decision-making, launching Australia's first Community Engagement Division within the Premier's Department, and prioritising innovative approaches to public participation in decision-making (State of Queensland, 2001a).

Enacting public involvement

Public involvement may be enacted in many different ways. It may be achieved via specific institutional practices, such as the co-option of public representatives onto existing committees and the conduct of 'open' board meetings (in front of interested public members, who may turn up to listen, but not contribute *per se*). Often, involvement is enabled through one-off exercises regarding some particular policy debate. Traditional forms of such involvement include public meetings, in which debate is carried out by (elected) representatives in front of an audience, who may be allowed limited time to ask questions of those on the podium at the end, and the referendum and opinion poll, in which public views are ascertained on a specific question, or on a number of questions, with statutory requirements to act on those views in the former case.

One common mechanism in the UK used by central government departments is the consultation, in which a document (usually paper) is made available for public comment with a set deadline for response (these are usually sent to representatives of relevant bodies, though they are often available to the wider public to read and respond to). With growing interest in public engagement, further mechanisms have been developed in increasing numbers over recent years. These include a variety of conference-like approaches, in which members of the public are brought together to hold a facilitated debate on a particular issue, such as the citizens' jury, planning cell and consensus conference (see, for instance, Crosby *et al*, 1986; Renn *et al*, 1993; and Joss, 1998, respectively). Indeed, Rowe and Frewer (in press, a) list over 100 different distinct mechanisms for community engagement.

The existence of so many different ways for enacting public involvement reveals the complexity of the concept, for engagement may take many forms, with many aims. Indeed, we have been careful up to now to refer to the concept as 'public involvement' or 'community engagement', since a synonymous term — 'public participation' — is one about which there has been considerable contention and debate. It

has been argued, for example, that many supposedly participative procedures are nothing of the sort, but essentially public relations exercises giving the appearance of participation but without truly empowering the public (Arnstein, 1969). The public meeting is a case in point: the public in attendance might feel that they are having an influence on policy, but the reality is that influence is often minimal.

For Arnstein (1969), participation requires empowerment; for other authors (often implicitly) participation requires some form of public input without a necessary link between input and outcome, with public participation being differentiated from simple public communication in which no public input is made (see, for example, Rowe and Frewer, 2000). Rowe and Frewer (in press, a) point out that a direct link between public activity and policy change is often difficult to establish, and hence using empowerment to determine what is, and is not, an incidence of 'participation' introduces research difficulties for those who set out specifically to study 'participation' exercises. They use the term public engagement to refer to all activities in which the public is in some sense involved in policy issues, and then differentiate three classes of engagement on the basis of an 'information flow' model:

- public communication involves the one-way communication of information from the exercise sponsor to the public (a passive recipient);
- public consultation involves the one-way transfer of information from the public to the sponsor (usually in response to the sponsor's questions); and
- public participation involves two-way information exchange and debate between members of the public and the sponsor.

Importantly, the aims of engagement mechanisms of the different types may differ; for example, 'public learning' is an aim of communication, but not of consultation. Hence the criteria against which the success of different mechanisms needs to be judged also differ. In this paper, we refer to public engagement and involvement synonymously and interchangeably, and use the definitions of Rowe and Frewer (in press, a) to distinguish specific sub-categories of this concept when appropriate.

Use of novel technologies

One significant trend in public engagement is the use of novel technologies, particularly the Internet and associated computer-based approaches, as the foundation of mechanisms, or as the medium through which engagement occurs. Again, various different formats are evident, which are used to involve the public in different ways to achieve different aims.

Continuing with the UK example, the present Prime Minister, Tony Blair, has committed all

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Government departments to go on-line by 2005, to provide information about Government activities (a concept labelled 'e-government'). To this end, a special 'e-envoy' with a remit covering both e-commerce and the IT (Information technology) elements of the *Modernising Government* White Paper (HMSO, 1999) has been appointed to oversee the transition (UK Cabinet Office, 1999), and recently UK Government policy has evolved to focus on both moving services on-line and encouraging their uptake.

One product of the e-government trend more generally is an Internet site (<http://www.ukonline.gov.uk>) on which is listed all current UK Government consultations that may be accessed and downloaded for comment by any reader. In an international best practice study on e-government, the Scottish Parliament, in particular, is considered a leader in terms of 'citizen participation' (Bertelsmann Foundation, 2001, page 10).

This situation is paralleled in other developed nations. A ministerial declaration of e-government as a European priority area was made following a high-level conference in Belgium (European Commission, 2001). In Australia, there are a number of e-government initiatives in train at all levels. Over 1600 on-line services were available across the Federal Government by the end of 2001: the principal on-line entry point (australia.gov.au) was recently launched, which will eventually comprise 18 portals with links to all areas of Federal Government, state and local governments (NOIE, 2002a).

The Online Council of the National Office of the Information Economy (NOIE) notes both progress and potential for e-democracy (NOIE, 2002b), resolving "to further explore and develop the use of the Internet to engage Australian citizens" at commonwealth, state and local levels. At state level, the Queensland Community Engagement innovations embrace electronic participation aspects, including plans to use the Internet for providing access to parliament, for solicitation of views on policy issues, and for providing the choice to lodge petitions electronically (State of Queensland, 2001b). Numerous local initiatives in e-government are also underway in Australia, some examples of which we instance below.

In the next section, we discuss in greater detail a number of prominent technology-based involvement initiatives, concentrating on those conducted through the Internet. Following this, we will analyse the potential promise and perils of such mechanisms.

Technological engagement mechanisms

Many different ways of utilising technology for involvement purposes have been developed. Differences in the forms of these have implications for their suitability and their likely effectiveness, that is, for the circumstances in which they might be used, and for what likely benefits might emerge from their use.

As discussed, Rowe and Frewer (in press, a) suggest that engagement mechanisms in general might be divided into three classes, associated with public communication, public consultation, and public participation. A recent PUMA (Public Management and Governance) policy brief makes a similar distinction amongst three different levels of engagement (termed 'information', 'consultation' and 'participation'), and recognises a concomitant sophistication of technologies (OECD, 2001). We use this as an organising principle for detailing and analysing technological engagement mechanisms.

In this section, we outline the characteristics of technological mechanisms associated with the three engagement levels, and give a number of examples of current mechanisms. Our aim is not to provide a comprehensive review of these (which is beyond the scope of this paper), but simply to identify predominant forms. In the subsequent sections, we discuss key research findings from the human-computer interaction (and associated) domain, and its implications for the potential of technological solutions to engagement problems.

Information transmission

Level 1 in the PUMA brief (OECD, 2001) is essentially information transmission, a one-way relationship in which government agencies provide information on-line for citizen use (as such, it corresponds closely to the 'communication' concept of Rowe and Frewer (in press, a)). Portal sites with a web interface are natural technological enablers here, and many jurisdictions have achieved their targets at this level.

Numerous examples of this are to be found across the UK, Australia and elsewhere. Corrigan and Joyce (2000) describe typical examples from several UK Government authorities, both central and local, that supply information on various services and allow interaction via email requests. Innovation continues in this area, such as with Cardiff's *Benefits Advice in Multimedia*, which provides expert advice and administration concerning welfare benefits. This system provides personal details of entitlements "24 hours a day, in 12 different languages and on public touch screen kiosks, intranets or WWW ... with video help and explanation available and at the user's own speed" (Ferret Information Systems, 2001).

Morrison and Newman (2001) critically describe several examples of government information transmission, including historical ones covering several nations. They observe that the UK on-line portal is emulating a strategy used in Victoria, Australia, where separate websites have been set up for different user groups, such as business, tourism, and the Victorian Government's Department of Human Services' 'better health channel'. The stated objective of the channel's programme is to provide government information in "consumer friendly" ways. These

strategies reflect a view in which citizens are consumers of information products, and engage through commerce-based paradigms.

Although the model of communication at this fundamental level is 'one-way', where information produced by government is made available and then transmitted either 'passively' on demand in response to citizen requests, or 'actively' disseminated by government campaigns, the transference of this interaction to an on-line setting is not straightforward. Morrison and Newman (2001) note that "Internet communications in reality operate on a constructivist, interactive communication model, (with) no passive targets. Instead there are active conversations ..." (page 174). They suggest that e-government web sites have been evolving only very slowly from instrumental publishing to constructivist interaction.

Higher degree of involvement

The second level in the PUMA brief entails a higher degree of involvement, in which consultation between citizen groups and governments occurs on identified issues (OECD, 2001). Feedback is implied (making a parallel with the 'consultation' concept of Rowe and Frewer), requiring the use of such established technologies as email and chatrooms, prior to decisions being taken. Again information provision on demand is key to these mechanisms (for instance, on impacts of proposed developments or revised traffic measures).

A traditional example of citizen opinion informing government decisions is the petition. Pepper (2001) describes the use of an e-petition to the Scottish Parliament by a liaison body for volunteer environmental groups on the issue of 'outdoor access for all'. This ran for two months in late 2001 concurrently with a paper petition (ensuring access equity), and quickly obtained many signatures. This was enabled through hotlinks to the petition, and by cascading the petition's web address through member organisations to individual members and other sites.

Pepper describes how, unlike traditional petitions, geographical and indeed national barriers were overcome, and other stakeholder groups relevant to the issue (such as, in this case, tourists) could be consulted. Detailed comments made on-line also added value to mere signatures, and allowed for dissenting or moderating opinion. Mechanisms were also in place for citizens to track the petition's progress.

The technology used — e-petitioner (ITC, 2000)² — is compliant with the guidelines of the Public Petitions Committee of the Scottish Parliament, and automatically removes duplicate names. Manual checking is still required, however, before a petition is submitted, and only printed copies are legally acceptable to the Parliament (Scottish Parliament Public Information Service, 2000).

Planning is another area of local and regional government in which community input is often seen as essential and, in several jurisdictions, required by

law. In the German city of Esslingen, citizens used the internet in discussing plans for a neighbourhood development project. Here both information and a moderated discussion forum were provided by the city in which both active and passive participation occurred (Märker *et al*, 2002).

Open communication and dialogue may be enhanced through on-line chatroom mechanisms. For example, part of Queensland's strategy for increasing young people's involvement in government decision-making is the GENERATE website, where government ministers are regularly available for on-line chat sessions on relevant issues, such as environmental concerns. This site is one of only three in Australia accepted in the new 'e-government' category of the Stockholm Challenge Award (see Stockholm Challenge, 2002).

Active participation

Technologically, the two examples above may be classified as second-level engagement according to the PUMA brief, although they involve both consultative and participative components with regard to the Rowe and Frewer definitions. The third level of participation in the PUMA brief (OECD, 2001), however, corresponds more closely with the 'participation' concept of Rowe and Frewer, and entails active citizenship, in which a high degree of engagement in policy shaping is enabled, with citizen-originated policy suggestions (for example) being actively discussed.

Here electronic meeting room technologies, virtual conferencing and related software technologies provide a means to enable this, ranging from simple audio conferencing through to sophisticated virtual reality spaces involving quasi-physical interactions (see, for instance, Magnenat-Thalmann and Thalmann, 1999). The Electronic Meeting Systems (EMS) are a specific type of Group Decision Support System (GDSS) that include structured process support as well as communication features (deSanctis and Gallupe, 1987; Nunamaker *et al*, 1991). These provide a sophisticated technology for group discussion that can accommodate participants dispersed across a wide area.

The third level of participation corresponds with citizen participation, and entails active citizenship, in which a high degree of engagement in policy shaping is enabled, with citizen-originated policy suggestions being actively discussed

Examples of Electronic Meeting System (EMS), or 'meetingware', technologies include Facilitate.com, GroupSystems, Grouputer, MeetingWorks, Teamfocus and Visionquest, which provide support for group meetings beyond standard groupware such as NetMeeting and Lotus Notes™. Although EMS have been around for over ten years and positive experiences with EMS have been reported in the literature, a recent study (Munkvold and Anson, 2001) found few published examples of rapid and broad adoption and diffusion of this technology.

The electronic town meeting (ETM) is one example of a mechanism that would fit into a level 3 designation. This entails citizens voting on an issue following receipt of information and discussion via electronic means. Several electronic media may be employed either simultaneously or one after the other to convey data, expand deliberation and/or make home voting more convenient. The most primitive form of ETM is where, say, a TV news show presents a mini-documentary on an issue, with a few experts giving their opinions, after which the public is requested to vote on the issue.

Another simple ETM might bring together a group of citizens to discuss an issue and vote on it in face-to-face groups, but using electronic handsets to vote anonymously during the process. Some of the more interesting and more complex ETMs have a more sophisticated recipe and add such ingredients as: scientific deliberative polling; an extensive electronic media mix; and conflict resolution techniques leading to as large a consensus as possible.

One particular example, described on the Tele democracy Action News and Network (TAN+N) website, took place in Houston, USA.³ In this, thousands of citizens participated in a citywide, prime-time televised ETM in September 1994 to review goals for Houston's future (the goals having been created by volunteer citizens participating in the 'Imagine Houston' process). The televised programme, broadcast live on network affiliate KHOU-TV, garnered a 12% share of the television audience, reaching approximately 250,000 citizens in a city of 2.5 million.

The ETM was structured as a two-way communication tool. Citizens at five community meeting sites around the city were linked by satellite with a studio panel for an hour-long interactive program. After the initial televised portion, the community meetings ranked the 50 preliminary goals that had been previously developed by citizen task forces. The result was seen as a blueprint for future policies. For other examples of ETMs, the reader is referred to the TAN+N website.

Additional level

Finally, it ought to be noted that a level beyond these three identified in the PUMA brief is envisaged by Unwin (2001) in his analysis of the European web-based public services survey. While on-line services typically consider 'front office' functions

(characterised by Unwin as: information; one-way interaction (downloadable forms); and two-way interaction (electronic forms)) a fourth level involves full electronic case handling. This level concerns 'back office' integration, and is likely to closely mirror technical developments in use in the private sector, in which full transaction handling is undertaken using electronic commerce paradigms.

In the present context, as the public increasingly engage electronically, automated processing of transactions and interactions will require assurance of identity and entitlement, which are significant research issues in themselves. Digital signatures and other 'identificatory' technologies are already in use for electronic transactions in the private sector, but to date have been little researched in e-government contexts. The information systems associated with automating selected public services are therefore considered a longer-term proposition, and the organisational impacts on agencies may have to be closely considered.

Some advanced technologies, however, are reportedly already under consideration by, for example, the Danish Government, where "(specific projects relating to the technical issues required for e-government for instance) initiatives to promote the diffusion of digital signatures as the basis for government web services, or the use of record management systems and electronic communication between authorities" are indicated (OECD, 2002). Extensive back office reorganization is likely to be implicated in moving towards such solutions but is still in its infancy (Juup, 2001), as is research examining the deeper structural issues, so we will consider this issue no further here.

Research findings on electronic engagement

Electronic engagement, in its various forms, has clearly been greeted with enthusiasm in both the political and public domain, as evidenced by the various initiatives described above. The question arises, however, as to whether this increased enthusiasm is warranted. That is, does the addition of an electronic component to public engagement have any merit? What advantages are gained through the process? What evidence, if any, is there to support the hypothesised advantages?

In this section, we consider what research tells us about the advantages, and disadvantages, of electronic engagement. Although some of this research comes from consideration of actual engagement exercises, much derives from more fundamental research on the psychology of decision-making and human-computer interaction, which appears not to have been disseminated into the engagement domain.

Evaluation

Establishing the effectiveness of novel technological engagement mechanisms is not straightforward. As

Rowe and Frewer (in press, b) point out, there is no one standard, universally accepted definition of what it means for an engagement mechanism or exercise in general to be effective. The main problem is that, in this context, 'effectiveness' is not an objective, uni-dimensional concept that is easy to measure, like speed or distance. Instead, it (also) involves the consideration of multiple subjective aspects related to the multiple aims, perceptions and expectations of the various parties involved. Difficulties also arise with regard to *what* should be evaluated (processes, or outcomes, or both, and of what form?) and *when* they should be evaluated (during the exercise, immediately after, or when?).

The nature of our effectiveness definition depends in large part on how we conceptualise public engagement and its aims (Rowe and Frewer, in press, b). Suggestions for criteria required to be met for exercises to be considered effective have thus included, amongst others, that they involve a representative sample of the affected population; that they are deemed open, or transparent; that they empower the participants; that they are efficiently run and facilitated; that they allow public learning, and so on (see Rowe and Frewer (in press, b) for details). Guston (1999) discusses a number of types of 'impact' that might be used as evaluation criteria — not only impacts on policies, but also on general thinking and learning.

In the absence of a universal definition of effectiveness to which we can refer, we may nevertheless attempt to draw some conclusions about the actual or likely benefits of technological mechanisms relative to the mechanisms that they are believed to better, by noting differences in participant behaviour across the different types, and interpreting (and justifying) these as being beneficial or detrimental. (This is an exercise that might usefully serve to identify the sort of criteria that might be included in a future evaluation framework.)

For example, it is possible to benchmark the effectiveness of computer-mediated communication (CMC) by comparing its mechanisms with alternative methods of communication. That is, processes that primarily function through electronic mail (e-mail, electronic bulletin boards) can be compared to alternative written or verbal methods, in the same way that the value of an electronic survey can be considered in comparison to other methods of survey administration, and methods involving dialogue (for instance, electronic town meetings, conferences) can be compared to non-electronic alternatives. This approach is the one that is followed in this section.

Benefits of speed and cost

There are various clear benefits of computer-mediated communication (in general) over traditional communication forms. One of the main advantages is as an information accelerator — a tool that reduces the amount of time it takes for people to

get information they might otherwise get more slowly (Sproull and Kiesler, 1986). This (generally accepted) advantage applies to most, if not all computer-mediated mechanisms, from electronic mail (a tool that is the basis of many electronic engagement mechanisms), to methods such as electronic surveys (where information is collected from participants).

A second generally accepted advantage of using technology for communication purposes is cost. For example, once respondents have access to a computer or network, the costs of collecting and communicating data electronically are relatively low when compared to the substantial costs of interviewing, telephoning, and sending questionnaires through the mail (Kiesler and Sproull, 1986).

Additionally, Ferrara and Nolan noted as early as 1974 that 20–40% of total computing costs of conducting a survey (as an example) may derive from transforming data collected off-line into a form that can be processed by computer, a cost that can be saved in an electronic survey, which eliminates the need for a transcriber or optical character reader (scanner). Though the costs of such technologies may have changed/reduced in recent years, costs savings are still likely today.

Impacts on social context cues

Though speed and cost are significant benefits of technology, and seem sensible criteria to use for ascertaining the effectiveness of engagement mechanisms generally (and would, all else being equal, justify technological methods over other approaches) they are not the only criteria of significance. It is important to recognise that different media have differential impacts on a variety of individual and social processes, some of which may be deemed beneficial, and others detrimental.

Perhaps the most significant feature of most, if not all, electronic engagement mechanisms is their attenuation of social context cues that are available in face-to-face interaction. That is, senders and receivers of information are situated within a social context that regulates or influences communication contact (who exchanges information with whom) and communication content (what information is communicated).

Different media have differential impacts on many individual and social processes: perhaps the most significant feature of electronic engagement mechanisms is their attenuation of social context cues that are available in face-to-face interaction

However, electronic communication removes non-verbal cues, such as gestures, nods, smiles, and facial expressions (as well as aspects such as tone of voice and loudness) that form an important part of human communication, and that indicate aspects such as strength of feeling, or whether the other person already knows or understands what is being said. Indeed, Kiesler *et al* (1984) referred to the “dramaturgical weakness” of computer communication, and more recently, Rainey (2000) has considered the possibilities for miscommunication inherent in e-mail and (by extension) related computer-mediated communication technology.

As well as eliminating such ‘dynamic cues’ related to aspects that change over an interaction (such as non-verbal behaviour), Sproull and Kiesler (1986) noted that communication by electronic mail (at least) also minimises ‘static cues’ related to aspects such as position in hierarchy (that is, power and status cues), particularly when a high degree of anonymity is involved in the process. This is liable to be important, given that communication flow in many settings is strongly influenced by political considerations concerning power and authority.

Relatedly, social and organisational norms and standards governing social interaction may no longer apply, or only to a lesser extent, in the attenuated environment of electronic communication — norms such as ‘be polite to your boss’ and ‘lead the discussion if you are the highest status person’. Thus, the interactions enabled in electronic engagement have different dynamics from those in traditional settings, and there are various levels of complexity at work in virtual engagement. A theoretical framework reflecting this has been suggested by Welch and Fulla (2002), who note, following Riva (1999), that traditional social mediation and sense of community roles may disappear.

The important question that needs to be answered is: how does the reduction of social cues impact on electronic engagement mechanisms and exercises? That is, what advantages and disadvantages might we expect to derive from this, and how might we expect electronic engagement to compare with more traditional engagement exercises? Relatedly, how can the facilitated mediation of engagement exercises compensate for the loss of traditional cues?

Impacts of electronic mail on information transfer

A number of studies have looked at electronic mail, which is the basis of electronic communication, being a necessary and composite part of most mechanisms (certainly in levels two and three of the PUMA classification; OECD, 2001). Electronic mail is an alternative to such communication methods as face-to-face, verbal (for instance, phone) and written (for instance, by memo).

Sproull and Kiesler (1986) reported one early study that looked at how electronic mail was used in

a major US company. They found that, although there was evidence that, with the removal of geographic, departmental, temporal, and other barriers, people did receive many more work-related messages than they said they would have received otherwise (that is, the mechanism helped information flow); they also received a great deal of non-work communication.

This phenomenon is now endemic, and a significant amount (over 40%) of email traffic includes unsolicited emails, or ‘spam’ (Sturgeon, 2003). Other recent research on this has suggested that, in 2002, spam cost corporate America US\$8.9 billion in lost productivity, resource consumption and technical support (Morrissey, 2003).

In an organisational setting, such information might merely serve to distract and occupy the time of employees that might be spent more productively, but in a participatory setting, information that is extraneous to the point could potentially obfuscate opinions, waste time, create information overload, and so on. With regard to the actual nature and quality (opposed to quantity) of information, Sproull and Kiesler (1986) found that people preferred to use electronic mail systems to send messages to superiors rather than subordinates (to whom they would rather talk face-to-face).

One explanation for this is status equalisation: that is, subordinates may prefer to have few reminders of status differences when talking to bosses (upwards) but not to secretaries (as an example, that is, ‘downwards’). In a participatory setting, at least, this would seem beneficial, in the sense that lay members of the public, we might suppose, would be more willing to engage with higher status individuals, such as policy makers and experts.

Sproull and Kiesler also found that the employees claimed to prefer using electronic mail systems to send bad news and to exhibit more ‘uninhibited behaviour’, that is, to behave irresponsibly more often on EMS than in face-to-face conversations, with more ‘flaming’ (defined as speaking rabidly or incessantly on an uninteresting topic or with a patently ridiculous or rude attitude).

A number of these trends have been shown in more recent studies (for instance, Neufeld *et al*, 2001) and have potential importance for the quality of information exchange in engagement settings. For example, Sussman and Sproull (1999) point out that delivering bad news is an important requirement for performance improvement and organisational learning (more generally, considering the bad, as well as the good, is important for effective decision-making).

In a laboratory experiment, they compared the use of three types of media: computer-mediated communication; telephone; and face-to-face conversation. They found that participants distorted negative information less (were more accurate and honest) when they used computer-mediated communication than the other two forms, though there was no

distortion in communication of positive information across the media (suggesting that using electronic communication leads to more 'honesty' rather than simply more 'negativeness'). Participants also reported higher levels of satisfaction and comfort in the computer-mediated situation. Sussman and Sproull suggest that those using such communication are socially buffered from their communication partner, and so find communicating bad news electronically less stressful.

Attitudinally, a number of these features might thus encourage use of electronic media. For example, Adrian (2001) describes empirical work that shows how introducing email not only improved employee attitudes with regard to inclusion and participation but also increased participation in networks of informal communication.

Impacts on information elicitation: electronic surveys

The issue of information distortion is also of crucial importance with regard to methods of information gathering and consultation more generally, whether through interviews or surveys, and whether the latter are conducted by phone, paper questionnaire or electronically. Every survey procedure, including the electronic method, introduces or exacerbates response effects (Sudman and Bradburn, 1974). These include respondents systematically refusing to answer certain questions, giving incomplete answers, not following instructions, under-reporting socially undesirable information (and over-reporting socially desirable information), choosing 'moderate' response categories, and 'yea'-saying (agreeing with the questioner's assertions).

For example, interviews increase the quantity of responses and details over self-administered paper questionnaires, but at the price of over-reporting socially desirable attributes. It seems that the relatively anonymous nature of self-administered questionnaires (in which social context information is minimised) reduces respondents' concern at presenting themselves in a good light. The electronic survey, in which social context information is reduced still further, making the research setting even more impersonal, might be anticipated to reduce even further concerns of respondents for social norms and the impressions they give others. Indeed, the response effects associated with electronic surveys have been the source of a number of studies.

In one pioneering study, Kiesler and Sproull (1986) compared an electronically administered survey with an identical paper questionnaire, using a sample of students and employees of a US university who were frequent computer users. Although their results showed considerable similarity of response between the two modes of obtaining information, they also found some significant differences. They found that responses to closed questions in the electronic survey were less socially desirable than responses to the paper survey (as measured in response to items from a

'need for approval' scale⁴), and respondents to the electronic survey left fewer items blank.

In a follow-up study using a smaller number of the original respondents, the authors also found some evidence that electronic survey respondents were less likely to be 'yea-sayers' and more likely to use extreme scale points (rather than moderate or middle values on scales) than paper survey respondents. Generally, however, evidence of reduced social desirability in response to computer-administered questionnaires is not unequivocal. If such methods are to be utilised in public engagement it is important to establish the magnitude of such effects on participation quality.⁵

Richman *et al* (1999) conducted a meta-analysis of 61 studies comparing the extent of social desirability responses in computer-administered and traditionally administered methods. They found essentially no differences between computer-administered and paper-and-pencil questionnaires on this measure, although there was less distortion in responses to computer-administered questionnaires than comparison face-to-face interviews (that is, subjects exhibited less evidence of giving socially desirable responses to the former than the latter).

However, their analysis also suggested that there were a number of moderators associated with reduced social desirability distortion between methods. For example, when subjects completing the task were alone (for instance, unobserved), and were allowed to backtrack (go back to previous answers to amend them), then social desirability responses were reduced for computer-administered in comparison to paper-and-pencil questionnaires. Further, there was some evidence that, when the information that subjects were expected to divulge was highly sensitive, social desirability was reduced when using computer methods with respect to the traditional approaches.

More recently, Wilkerson *et al* (2002) have shown that social desirability responses are lessened in both computer-administered and paper-and-pencil surveys when the context to present oneself favourably is low opposed to high (for instance, a consumer survey versus a job-screening interview), and they also found no difference in social desirability responding between these two communication modes. In the light of these findings, it might seem curious that interviews (at least) are still used to gather sensitive information, though Richman *et al* (1999) suggest that face-to-face interviews trade off distortion for more complete responses, as face-to-face interviews are seen as being more motivating, reducing non-response and encouraging longer, more elaborated answers (see Sudman and Bradburn, 1974).

Impacts in video-conferences

Electronic mail systems and electronic surveys greatly attenuate information about the information source and receiver. In higher-level computer-aided mechanisms, such as video-conferences, there may

be more information available than in more basic mechanisms, though differences still exist between these and face-to-face approaches. In the video-conference, information from an individual or group at one site may be transferred in real-time (or near real-time) to one or more people at one or more other sites. Though various verbal and non-verbal cues may be evident through the way in which the target of the camera speaks and behaves, these are not the same as would be available face-to-face (for instance, Marwick, 2001).

For example, at present, video-conference pictures are two-dimensional and focus on the face and upper-body of the speaker, whom other participants may scrutinise without appearing to stare (and so on). There are reasons to expect that the different number and quality of cues available to participants may influence aspects such as their knowledge and liking of the remote other/s, and their evaluations of performance and competence.

Storck and Sproull (1995), for example, showed that the impressions people form of remote others are different from and less positive than the impressions they form of face-to-face others, starting from an equal baseline. The authors suggest that people use different information in forming impressions of their peers when face-to-face or interacting via video, in particular, they rely less on task competence information and more on communication competence in the latter (for instance, people with high communication anxiety were evaluated lower when observed via video than face-to-face).

Marwick (2001) also considered differences in the impressions formed of others by people using several different media. He cites a study that shows that, although video-conferencing (at high resolution, not Internet video) was almost as good as face-to-face meetings, audio-conferencing was less effective and text chat least so in terms of establishing trust. If trust in community settings is important, minimal technologies such as text messaging may not suffice for the purpose, and there is an accessibility trade-off involved. On the other hand, as experience with video-enabled phones, instant messaging and virtual environments becomes more commonplace in the leisure and work spheres, traditional models of group decision-making may become redundant. This, however, requires further research.

Behaviour in electronic and traditional groups

Engagement, particularly at the second and third levels of the PUMA classification, and at the level of 'participation' in the Rowe and Frewer definition, generally involves interacting, deliberating individuals, in either face-to-face or 'nominal' (non-interacting) group settings. Mendelberg (2001) conducted a thorough review of the issue of deliberation in small groups more generally. Noting that there is almost no systematic research on the nature and consequences of deliberation in real settings, he

discussed results from research on social psychology in more artificial, experimental settings.

The evidence from this research has conflicting implications for the value of increasing citizen involvement (for instance, in politics) via deliberation. Though some evidence suggests deliberation may lead, for example, to increased empathy and enlightenment in people regarding their own and others' needs, and increased ability to help resolve conflicts in some situations, other common social psychological phenomena (such as polarisation and social comparison) can lead to increased conflict.

Yet what influence might technology have on the possible efficacy of the deliberative process? Other research speaks to the relative differences in human behaviour and performance in both normal and electronically mediated 'group' settings, with emphasis again focused on the reduction in social cues evident in computer-mediated groups relative to traditional alternatives.

In one of the earliest studies on this issue, Siegel *et al* (1986) considered the effects of computer-mediated communication on communication efficiency, participation, interpersonal behaviour, and group choice. Over three studies, in which they compared groups that communicated either face-to-face, or via a variety of computer-mediated discussions, they noted a number of interesting findings. First, groups linked by computer made fewer remarks and took longer to reach decisions than regular groups. This could be seen as a negative aspect of use of computers, since time to reach a decision may be used as one criterion of effective group performance. However, this does not speak to the quality of the decision ultimately derived.

There is evidence elsewhere that groups using a GDSS make qualitatively better decisions (in a number of different task types) than non-supported groups (Lam, 1997), although, in a major review of controlled experiments that have examined computer-supported group decision-making, Fjermestad and Hiltz (1998) suggested that the modal outcome for GDSSs compared with face-to-face methods is "no difference". However, these authors found that results are moderated by technology, process structure, communication mode, group factors, task type, the number of experimental groups per treatment condition, and the type of dependent variable measured.

Other research has shown that non-face-to-face groups (albeit without computer mediation) consistently make more accurate judgments than face-to-face equivalents. Rowe and Wright (1999) reviewed research on the Delphi technique, which is one frequently used method of bringing together a variety of individuals to solve a particular problem or make a particular judgment. The technique basically collects anonymous estimates from the various individuals involved (often geographically dispersed), and presents these to the other members over a number of rounds. New estimates, and occasionally justifications, are collected from those involved on

each new round, and the average estimate on the final round is taken as the group judgment. Usually, Delphi is enacted via paper questionnaires, though it may be enacted by distribution of questionnaires via electronic means, and may even involve real-time processes.

In their review, Rowe and Wright (1999) found that Delphi groups actually outperformed (in terms of improved accuracy of judgments) comparison interacting groups in five studies to one, with two studies showing no significant difference between group types. One suggestion is that the absence of cues typically found in interacting groups may enhance judgment, because the cues typically found in these groups may be inappropriate ones that lead to pressures to conform to authority and the group majority even when one disagrees with the indicated judgment or decision. Evidence also suggests that the more information provided in such non-interacting groups, the better the quality of judgment obtained (Rowe and Wright, 1996).

In their classic study, Siegel *et al* (1986) also found that social equalisation was higher in computer-mediated groups than regular versions, in that group members participated more equally in discussion, and hence did not appear to be inhibited by authority figures. Clearly, if people are present in a group, but do not contribute — perhaps being inhibited by the presence of higher status individuals — then the activity is sub-optimal, in the sense that, at the least, those individuals could better employ their time, but also because they may have information that is pertinent but which is not expressed (even an expression of agreement or disagreement is informative). Indeed, such social constraints are one argument against the efficiency of face-to-face groups, and this has been used to justify a variety of non-interacting group processes, such as the Delphi technique (Rowe and Wright, 1999).

Siegel *et al* (1986) further found that computer-mediated groups exhibited more uninhibited behaviour — using strong and inflammatory expressions in interpersonal interactions (as also noted in the earlier discussion of the study of Kiesler and Sproull (1986), who demonstrated this for electronic communication). Of course, such behaviour could have positive or negative implications. If perceived as offensive, it could obstruct efficient process and personalise the debate (it has been described as ‘anti-social behaviour’), though it could also be a way of adding magnitude and emphasis to arguments (reduced in this medium), and may enable the expression of strong or contradictory views that social norms may prevent being expressed in regular group interactions. It would seem that other contextual effects related to the actual situation might determine whether the result is destructive or constructive.

Decisions of computer-mediated groups have also been shown to shift further from members’ individual choices than group decisions following face-to-face discussions. Such ‘polarisation’ of views is a

typically observed phenomenon of groups (Mendelberg, 2001). Siegel *et al* (1986) appeared to show that computer mediation further exaggerated this trend, and McGuire *et al* (1987) subsequently found differences in the output of face-to-face and computer-mediated groups performing tasks involving choosing amongst risk options. In particular, McGuire *et al* (1987) found the former groups became more risk averse for gains and risk seeking for losses, while the latter did not mirror this shift. The authors suggested that the greater shift in positions was due to the greater impact of persuasive arguments in face-to-face interactions than in computer-mediated interactions (that is, face-to-face discussions contained more argumentation, relative to simple statements of position, than did the computer-mediated discussions), though the shift might simply represent greater influence of the group norm in drawing the opinions of the group members to it.

Increased polarisation of views is one area in which electronic engagement might thus prove potentially detrimental, if it leads to the entrenched positions of competing parties becoming more so. Sunstein (2001) discusses this issue in relation to internet democracy. He suggests that the properties of the internet enable extremism to increase, and notes that “group polarisation is intensified if people are speaking anonymously, and if attention is drawn ... to group membership” (page 35). Indeed, Gibson (2001) cites a report noting that financial and cognitive requirements for new media used for engagement purposes may only reproduce and entrench existing modes, and questions whether deliberation in cyberspace adequately substitutes for face-to-face discussion.

Study is clearly needed to assess the extent to which the ‘polarisation’ phenomenon trades off against the ‘improved judgmental quality’ phenomenon in computer-mediated groups to affect engagement quality.

Other research points to interesting characteristics of computer-mediated groups in general. Galegher *et al* (1998) studied electronic support groups. In these, people use internet-based electronic text communication to discuss personal problems with others who share common circumstances. As with other electronically mediated discourse mechanisms, discourse occurs asynchronously across time and place. These authors identify and discuss the important issues of legitimacy and authority in such groups, and note differences between these and face-to-face groups. For example, in face-to-face groups, legitimacy, or commitment, is indicated by members dressing appropriately, travelling to the group (physical presence), and even wearing a name tag and contributing to a coffee fund — all indicating that the group is important to the person, and that they want to be a member.

Such behaviour is not pertinent when interaction occurs over the Internet. The authors suggest that, without commitment, messages may be ignored or

dismissed as illegitimate: in their analysis of the discourses of a number of such groups they seemed to show that certain tactics were used to demonstrate legitimacy (referring to group membership, and describing symptoms and histories that indicate membership of the group topic), without which posted messages tended to be ignored.

Similarly, authority (or credibility) is an important concept in which face-to-face and Internet (here, support) groups differ, and this is relevant for those answering queries and giving advice. In Internet groups, cues to authority are not evident (through dress, known status, and so on), and so the appropriateness, relevance and sufficiency of arguments need to be demonstrated and justified. The authors considered the ways in which authority was established through providing detailed scientific information, personal information, or both. They also suggest that Internet support groups come to acquire standards and norms just as face-to-face groups, with challenges made to those who breach conventions of topic and (written) behaviour.

Nature of participants in electronic engagement

One important characteristic frequently used as a gauge of the effectiveness of engagement exercises (of whatever type, whether electronic or otherwise, and whether of communication, consultation or participation types) is the nature of the participants involved, in particular, the extent to which they are 'representative' of the affected population (for instance, Rowe and Frewer, *in press*, b). If those who participate are atypical, then communicated information will not reach the appropriate targets, and elicited information will not cover all appropriate viewpoints or facts.

Generally in engagement exercises, participants are either selected in some manner in order to be representative to some degree, or they are self-selected. Clearly, the former method has relative merit over the latter, but structural characteristics of mechanisms may demand self-selection, perhaps trading off this potential disadvantage for some hopefully greater advantage.

In electronic participation exercises, respondents are invariably self-selected and, as such, their representativeness with respect to the wider population is uncertain. For example, the sampling of electronic surveys is restricted to members of organisations and populations that have access to computers and to people who feel comfortable using them (that is, those who are technologically sophisticated, and potentially better-educated and better-off (in the sense of being able to afford the technology)).

Other research has specifically addressed the nature of bias in responses to electronic surveys. Walsh *et al* (1992) were able to compare respondents to an electronically administered survey who were selected to respond, against others who were self-selected, having learned about the survey

Self-selected respondents gave higher-quality responses, were generally more positive towards scientific computer networks, and wrote more about the benefits of electronic communication and less about its drawbacks, as well as using networks more than a random sample

through the subscriber network for oceanographers from which the stratified random sample was taken (the comparison was unplanned).

They found that the self-selected respondents gave higher-quality responses, in terms of giving longer open-ended responses and fewer missing responses to fixed questions (5% to 12%). The self-selected respondents were also generally more positive towards scientific computer networks, and wrote more about the benefits of electronic communication and less about its drawbacks, as well as using networks more (for instance, to do on-line searches and access bulletin boards) than the random sample. However, the two samples did not differ on a variety of demographic characteristics (for instance, years since PhD, rank, publications, professional stature, prestige of institutions), although they both came from a limited population subset, and we should be careful in generalising from here.

An added problem in considering the representativeness of those engaged in electronic mechanisms, particularly on-line groups, is the presence of 'lurkers', who keep a watching brief on, or track, discussions, without necessarily becoming actively involved (Märker *et al*, 2002). Lurkers may simply be gathering information and awareness, or their passivity may be because others are effectively making points they themselves would make. Equally, if an initially heterogeneous group polarises to entrenched extremes, lurking participants may consider contributions to be futile. In any case, it is hard to gauge the extent of a view's representativeness without auxiliary measures.

Lurkers are not only passive, however. In one on-line community study, Willett (1998) showed that a substantial proportion of lurkers (45% of group participants) corresponded privately with others. Clearly, these ought to be considered participants in the process, though their identity and impact are difficult to determine.

Indeed, one of the big challenges identified by Juup (2001) for e-government concerns the identity of participants, and this has both technological and legislative dimensions. Equitability is an issue of particular concern to governments, which have an

obligation to ensure that information and the potential to engage in consultation and participation is available to all citizens. The notion embraces issues of access by disabled, remote, computer illiterate, financially disadvantaged and other citizen groups.

Although the authentication of individuals communicating electronically can be handled in various ways, to move beyond presumption of identity from (say) email location requires more sophisticated procedures that can imply costly security checks. Although not all interactions between government and citizen groups will depend on sophisticated security measures and identity checks, some more advanced forms of participation are likely to require this. The research into this, motivated by parallel issues in e-business, is also in its infancy and presents another challenge to the realisation of e-government. Certainly, more research is needed into *who* takes part in electronic engagement more generally, in addition to *how* they engage.

Discussion

The use of novel electronic-based methods for engagement purposes — whether for communication, consultation, or participation — has clearly caught the imagination of policy makers and practitioners. For example, figures show that the Internet has become “a mainstream channel of political communication”, and email particularly is playing an increasing role in political campaigns and in informing engaged users (Cornfield and Rainie, 2003). The methods available for engagement seem to be continually increasing in numbers and sophistication, from information-based communication portals on the Internet, to the use of chatrooms and electronic mail, to mechanisms such as video-conferencing.

The rationale for using such approaches, however, is not entirely clear, and there is a danger of future engagement being driven by a ‘technology push’ that does not reflect a ‘consumer pull’, that is, of developing mechanisms simply because the technology is available to do so, with little thought of whether the consumers, or participants, really desire engagement through such processes, or how they might actually use (and abuse) that technology. After all, it is an established principle in offering any product or service that there is first market research to identify likely demand issues.

The history of new information technologies and systems provision is littered with examples of failures because of inadequate user-needs analysis, and developer-centred, rather than customer-centred solutions. A particularly well-recognised class of failure is interaction failure (Lyytinen and Hirschheim, 1987), where systems are produced that people simply do not like (Kimble and Selby, 2001). Indeed, Bimber (2001) has considered whether the Internet “causes” an increase in citizen engagement and participation. He reports recent studies, addressing

the USA and western Europe, that directly examine this issue, and that have found little effect of technology on political participation rates.

While it is generally accepted that electronic means may hold advantages in terms of speed and cost, there are other issues that need to be taken into account in considering the likely ‘effectiveness’ of such mechanisms. For example, if participation levels are low due to reasons such as lack of trust, accessibility, and disillusion, simply making existing processes available in electronic forms may not achieve the active democracy sought.

Technology enables, not just different versions of traditional forms of public participation, but potentially a transformed engagement of citizens with democratic processes (for instance, Clarke, 2002). That is, electronic and on-line processes have a number of qualitatively different properties compared to traditional methods, such as surveys and focus groups, which research suggests will differentially interact with aspects such as the type and structure of task to affect group communication and decision quality, both positively and negatively (for instance, Lam, 1997; Fjermestad and Hiltz, 1998).

For example, while research generally suggests that, with respect to traditional communication and interaction media, group decisions may be improved, socially desirable responses may be reduced, more information may be elicited from participants, and greater equality between participants may be achieved (with reductions in the power of status cues); it also suggests that participant views may become more polarised, that trust in other participants may be reduced, that more uninhibited behaviour may be expressed, and that decisions may take longer to be achieved.

Furthermore, the representativeness of participants is likely to be compromised by issues of technology access and interest. What is clear is that electronic mechanisms may not be appropriate in every engagement situation, and what is needed is a theory linking particular engagement tasks and scenarios to particular technology types (a similar point is made by Zigurs and Buckland (1998) in the more specific context of group support systems).

Gibson (2001) suggests that, although much background research in computer-mediated communication exists, it has generally not addressed active political decision-making. There are numerous unexplored issues involved at the nexus of computer-mediated communication and public life, including usability, equity of access, security, privacy, maintenance, intellectual property, usage policies and so on. The readiness of citizens, and the telecommunications infrastructure of a region, may also impact on the effectiveness of such provision (for instance, Morrison and Newman, 2001). Furthermore, it may be that the results from simplified controlled studies do not generalise well to the much richer and complex world in which engagement actually takes place.

Fountain’s (2001) analysis of the possibilities of

digital governance in the American public sector makes a number of similar points based on real-world case studies, suggesting that many issues involved in integrating technology and government have not been adequately debated or even recognized. She argues that the real challenges lie not in achieving the technical capability of creating a government on the web, but rather in overcoming the entrenched organisational and political divisions within the state.

Fountain raises questions such as who will pay for new government websites, which agencies will maintain the sites, and who will ensure that the privacy of citizens is respected. She contends that such political and structural battles will influence not only how the American state will be remade in the Information Age, but also who will be the winners and losers in a digital society. Fountain's arguments are likely to be relevant more generally in the developed world.

In conclusion, electronic mechanisms may indeed prove to be a valuable means of enacting public engagement, but their utility and effectiveness are liable to vary across circumstances, and they are unlikely to be superior to more traditional mechanisms in all instances. It is up to future research to increase our understanding of how people behave when engaged in such processes, how this impacts on engagement effectiveness, how to evaluate such effectiveness and, consequently, in what contexts these novel mechanisms may best be applied. This paper has attempted to note a number of the most relevant findings on these issues, and identify areas in which future research might best be concentrated.

Notes

1. See <<http://www.aebc.gov.uk/aebc/terms.htm>>, last accessed 15 January 2004 and <<http://www.hgc.gov.uk/about/terms.htm>>, last accessed 15 January 2004.
2. For details of this software, see <<http://itc.napier.ac.uk/default.htm>> and <http://itc.napier.ac.uk/ITC_Home/News/e-Petition_Scot_Parliament.asp> both last accessed 15 January 2004.
3. See <<http://frontpage.auburn.edu/tann/tann2/index.htm>>, last accessed 15 January 2004.
4. High social desirability of responding is indicated by a greater tendency to agree with items that state, for example, "I am always careful about my manner of dress" and "I never resent being asked to return a favour".
5. Other details on electronic survey administration, including guidelines, may be found at <<http://www.rand.org/publications/MR/MR1480/>>, last accessed 15 January 2004, <<http://www.succeed.ufl.edu/papers/01/00142.pdf>>, last accessed 9 August 2002, and in Shannon, David M, Todd E Johnson, Shelby Searcy and Alan Lott (2002), Using electronic surveys: advice from survey professionals, *Practical Assessment, Research and Evaluation*, 8(1). available at <<http://ericae.net/pare/getvn.asp?v=8&n=1>>, last accessed 15 January 2004.

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