Participation bias, durable opinion shifts and framing effects in citizens' juries

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ABSTRACT

Deliberative events such as citizens' juries may lack external validity, since participants may differ from the population either demographically, attitudinally, or in their predisposition to opinion shifts. We investigate this by analysing the first large-scale citizens' jury to take place in Ireland. The jury was a random sample drawn from the 2002 Irish Election Study, and we use the 2002 IES and the 2003 and 2004 panel studies as control groups. Large opinion shifts were observed, and these shifts remained observable nine months later. However, a troubling feature of the experiment was the extent to which key stakeholders who expected to be on the "losing" side were able to influence and de-legitimize the eventual outcome, by withholding their cooperation in the entire process.

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Deliberative events such as citizens' juries may lack external validity, since participants may differ from the population either demographically, attitudinally, or in their predisposition to opinion shifts. We investigate this by analysing the first large-scale citizens' jury to take place in Ireland. The jury was a random sample drawn from the 2002 Irish Election Study, and we use the 2002 IES and the 2003 and 2004 panel studies as control groups. Large opinion shifts were observed, and these shifts remained observable nine months later. However, a troubling feature of the experiment was the extent to which key stakeholders who expected to be on the "losing" side were able to influence and de-legitimize the eventual outcome, by withholding their cooperation in the entire process.

INTRODUCTION

There is considerable research documenting individual and aggregate-level opinion shifts in deliberative events (see for instance Fishkin 1995; Luskin, Fishkin & Jowell 2002; Merkle 1996; Goodin & Niemeyer 2003; Hansen & Andersen 2004). Since this research shows that deliberation does make a difference, it is important to know the extent to which members of a deliberative body, together with their deliberations and consequential opinion shifts, can validly be seen as representing the more general citizenry, for which the deliberative body is taken as a proxy. Should it be representative, we then need to explore factors driving opinion change before we can commend the deliberated outcome as reflecting the opinion of informed or enlightened public representatives. In what follows, we consider these aspects of the citizens' jury process and the attendant implications for deliberation more generally, by analyzing the results of the first large scale citizens' jury event to be organized in Ireland.

We first consider the potential for bias in the composition of the deliberative body, relative to the more general population, in terms both of the social composition and the relevant attitudes of deliberators. We do this by randomly sampling deliberators from the (randomly sampled) set of respondents to an election study and follow-up panel studies, in which, long before jury recruitment, respondents were questioned on attitudes directly relating to the matter to be deliberated, including the precise questions for deliberation. This gave us a well-structured research design that allowed us to draw inferences about demographic and attitudinal bias in the processes of jury selection and attrition.

The second important feature of deliberation that we investigate is opinion change, and the extent to which the shifts that occur during deliberation are transitory phenomena, or persist over long time periods. We assess this by comparing the results of the survey-resurvey of jurors on the day of the event, with the large random sample of Irish voters in the 2003 and 2004 IES panel studies, one conducted three months before, the other nine-months after, the jury's deliberation. The latter study in particular gives is a treatment-control research design that allows us to estimate to extent to which long-term changes in attitudes among jurors differ from those in the population as a whole.

Finally, we explore the mechanisms driving opinion change, and in particular, the issue of framing by invited speakers who had a direct interest in the outcome. We first estimate the effects of information gain and group pressure on opinion change, by apllying Luskin, Fishkin and Jowell's (2002) model to our data. We then highlight the consequence of our deliberate decision to select a "hot button" issue for deliberation – an issue in which key stakeholders in the decision-making process had sharply divergent positions and an interest in manipulating the result.

CITIZENS' JURIES AND DELIBERATIVE POLLING

Citizens' juries[1] are one of several types of formally organised deliberative forums that are becoming increasingly familiar in real world decision-making. Others include: citizens' panels; citizens' summits; consensus conferences; deliberative mapping; deliberative polling[2]; and scenario workshops. To these can be added one-off processes such as participatory forums on public health policy in Oregon and community policing in Chicago, or annual municipal budgeting in Brazil.[3] These forums are inspired by visions of direct democracy derived from idealized notions of ancient Athenian and US town meetings. They use various methods, including survey techniques, to recruit citizens to panels of a size deemed suitable for interpersonal deliberation. Participants are typically given balanced briefing materials in advance and are then brought together at a single site over a day or several days, sometimes with experts and political leaders to inform their discussions. They engage in intensive discussion and debate on the issue under consideration, in some cases with the objective of reaching a group conclusion, or agreed set of recommendations, to which the commissioning body may be required to respond (in the case of UK citizens' juries for instance: see Smith & Wales 2000), or even implement (municipal budgeting: see Wampler 2004).

[1] Ned Crosby has copyright of the term 'citizens' jury'.
[2] James Fishkin has registered 'Deliberative Poll' and 'Deliberative Polling' as trademarks.
[3] Ackerman & Fishkin 2002; Andersen and Jaeger 1999; Coote & Lenaghan 1997; Crosby 1995; Crosby, Kelly & Schaefer 1986; Eames, Stirling, Burgess, Davies, Williamson, Mayer & Staley 2003; Fishkin 1991, 1995, 1996, Fishkin, Luskin & Jowell 2000; Fung 2003; Hansen & Andersen 2004; Horning 1999; Luskin, Fishkin & Jowell 2002; McIver 1997; Merkle 1996; Pickard 1998; Renn, Webler & Wiedmann (eds.) 1995; Smith & Wales 2000; Stewart 1995, 1996, 1997; Stewart, Kendall & Coote 1994; Wampler 2004.

The event that we describe below combines elements of both citizens' juries and deliberative polling. Juries usually involve a small number of participants (between 12 and 24), chosen by purposive sampling to represent a rough cross-section of the target population. Deliberative polling involves a randomly selected statistical sample of several hundred participants. Another important difference is that juries are expected to reach a consensual, collective decision. Deliberative polls do not, based in part on the concern that this may potentially create a pressure to agree and obstruct the expression of dissenting views. Significant opinion-shifts are observed by using pre- and post-deliberation surveys. While we retain the term 'citizens' jury' for the event we describe, we chose to randomly select a larger number of participants than is usual in juries in order to study representativeness and opinion shifts statistically. However, we wanted a group that was still small enough to be given, and to see itself as having the responsibility to produce, a collective "verdict" on an important public issue (our initial target was for 50 jurors), and for this reason we retain the term.

The background to deliberative forums, and to citizens' juries and deliberative polling in particular, has three main components. The first is the current trend for public bodies to engage in *public consultation*, in the context of statutory obligations, customer service guidelines and so on. While public consultation has its own background and history, and derives in part from attempts by state agencies to maintain public approval and legitimacy, deliberative forums are regarded by some as providing opportunities for more in-depth and more inclusive consultation than other forms such as referendums and public meetings (see for instance Coote & Lenaghan 1997; Crosby, Kelly & Schaefer 1986; Crosby 1995; Fung 2003; Renn, Webler & Wiedmann (eds.) 1995; Smith & Wales 2000; Stewart 1995, 1996, 1997; Stewart, Kendall & Coote 1994; Wampler 2004).

A second stream informing the use of deliberative forums is the theoretical development of *deliberative democracy*. For deliberative theorists, citizens' free and equal political status implies a constraint on what policies they should be in favour of, and how those policies should be identified. Instead of conjoining majority rule with pluralist competition and self-seeking voting, the democratic process should involve interpersonal deliberation aimed at identifying mutually acceptable supporting reasons for agreed policies or decisions. On the one hand the claims of deliberation are presented in

terms of expectations about the benefits of making collective decisions by means of deliberation. On these arguments, deliberation is claimed to provide a setting in which: decisions are improved by revealing private information, lessening bounded rationality, and producing better-informed citizens; citizens are encouraged to reason on terms that are justifiable to others with quite different interests; individuals can clarify their own true interests or improve their moral and intellectual capacities; a rationally motivated consensus may emerge; and the ultimate decision may appear legitimate in the eyes of the entire decision-making group, including those on the "losing" side (Fearon 1998; Elster 1997, 1998*a*, 1998*b*; Benhabib 1996; Habermas 1997; Gutmann and Thompson 1996; Sunstein 1997). On the other hand, theorists may define deliberation in terms of an idealised standard characterised by norms or procedural rules which constrain the process to be inclusive and impartial (Elster 1998*a*; Cohen 1997; Gutmann and Thompson 1996; Habermas 1992, 1996*a*, 1996*b*, 1997). The implication of deliberative democracy is the need for deliberation to occur in formal and informal forums in which preferences are formed or decisions taken, including those in which the public may participate.

Finally, consultation (potentially) and deliberation are brought together in the justification offered by James Fishkin and his colleagues for *deliberative polling*. When opinion polling was first developed, George Gallup claimed that it would be as if the public were "in one great room" (Gallup 1939; cf. Luskin, Fishkin & Jowell 2002), where the combination of media and polling could enable the public to, virtually as it were, discuss issues together and communicate their resulting opinions to government. However decades of research have shown that respondents are very often severely uninformed, are markedly unstable in their opinions and have low levels of attitudinal constraint (Converse 1964; Bishop et al 1980; Delli Carpini and Keeter 1991; Luskin 1987; see Fishkin 1995; Luskin, Fishkin & Jowell 2002). "An ordinary poll" Luskin, Fishkin and Jowell write, "is designed to show what the public actually thinks about some set of issues, however little, irreflective, and changeable that may be, and generally is. A Deliberative Poll is designed to show what the public *would* think about the issues, if it thought more earnestly and had more information about them. It is a glimpse of a hypothetical public, one much more engaged with and better informed about politics than citizens in their natural surroundings actually are" (2002, 458).

Selection of issue for deliberation

A fundamental decision we took when designing the citizens' jury experiment was that the issue for deliberation would be a "hot button" real political issue on a matter that was yet to be resolved. This was not to be an after-the-fact deliberation on some matter already decided. Nor was it to be a deliberation on a matter of little real-world relevance. We felt that the deliberative method could only be validly investigated if deliberators: came to the process with real attitudes on an issue that mattered to them; felt that they were contributing to a real public debate on this issue; and felt key decisions on this issue had not already been taken. The issue we selected for deliberation concerned a proposal to build an incinerator/thermal treatment facility for the disposal of household waste generated in the Dublin area.

The policy context for this is that Ireland has a serious problem in managing household waste; landfills are rapidly filling up and local citizens' groups have been very effective in opposing proposed new landfill sites. Recycling rates in Ireland are extremely low by European standards. There is currently no thermal treatment facility for dealing with household waste in Ireland and, again, there is considerable opposition from local residents to any proposed site for such a facility. Ireland is nonetheless legally obliged within the current EU regulatory environment to do something about all of this.[4] The Irish government's "integrated waste management strategy", set out in *Waste Management - Taking Stock and Moving Forward* (2004), states that "While most plans envisaged the provision of thermal treatment as a long-term objective, the time that can be required in order to procure such projects … and to complete the necessary planning and environmental licensing processes means that *those regions which have yet to show progress in this regard need to initiate action in the shorter-term*." (p18 emphasis added).[5] A proposal had been floated by Dublin City Council, the responsible public

[4] See the Sixth Community Environment Action Plan; the EU Landfill Directive (1999/31/EC); and the ERU Waste Incineration Directive (2000/76/EC)

[5] This document and others relating to official Irish government policy on waste management can be found at www.environ.ie

authority, for a thermal treatment facility to be built in the Ringsend area of Dublin.[6] Ringsend is about three miles from the centre of Dublin. Essentially a traditional working class area close to substantial port facilities and the region's main power station, its proximity to the city centre, combined with high Dublin property prices, has led to considerable gentrification in recent years. The Ringsend proposal was highly controversial and was selected by us for public deliberation as an open "hot button" issue. The "population" was defined as the group of citizens whose household waste would be in the area to be serviced by the proposed treatment plant. This was because it is precisely this group who faced the hard choice under current EU regulations between opting for thermal treatment *somewhere* in their area, and opting for some alternative solution to the disposal of household waste, given the rapidly declining and increasingly regulated option of landfill.

We offered the jury two questions for deliberation, one dealing with the general waste management issue, one with the specific Ringsend proposal: (1) Is there a role for household waste incineration in an integrated waste management strategy for Ireland? (2) If so, should an incineration plant for Dublin household waste be built in the Ringsend area?

Selection of jury from election study respondents

Previous studies have shown that selection bias on demographics, attitudes, and knowledge of and interest in politics, may sometimes be a feature of deliberative events. This has been explored either by comparing attendees with non-attendees from the larger sample from which they are recruited, or using census data (Merkle 1996; Luskin, Fishkin and Jowell 2002; Hansen and Andersen 2004). One purpose of our research was to investigate this potential for selection bias. Given this, we sampled jurors from the set of respondents to the Irish Election Study of 2002 (IES), themselves a random sample drawn from the population of Irish voters.[7] The survey had a response rate of about 60

[6] The website of this project and "official" statement of the case for thermal treatment in Dublin can be viewed at www.dublinwastetoenergy.ie

[7] For a description of the IES, see http://www.tcd.ie/Political_Science/Staff/Michael.Marsh/ElectionStudy/.

percent and yielded 2663 interviews, of which 499 were respondents from Dublin constituencies .

Obviously, the IES respondent "population" from which our jury was sampled was potentially biased. Known demographic aspects of this bias were corrected by weighting survey respondents before sampling. However, there is no escaping the fact that survey respondents, as opposed to non-respondents, have already shown some appetite for a particular type of participation and expression of attitudes. Thus our jury may have been "biased towards participation", holding everything else constant. If this (unobservable) bias is present, we expect real-world jury attrition rates to be even higher than those we observe here – since our rates of non-participation are observed in a sample that is in some sense biased towards participation. Our findings on the effects of jury attrition are thus conservative. This disadvantage is balanced by the advantage of sampling from the population of IES respondents. Our jurors were randomly selected citizens for whom we had a large amount of demographic and attitudinal information, collected before the jury selection process and any conceivable treatment effect commenced. This allowed us to investigate the kind of biases in the jury selection process referred to above.

The IES post-election study of 2002 was supplemented by a panel study of the entire IES sample, conducted by postal questionnaire in summer 2003. The survey yielded 1197 valid responses (a response rate of 45%), of whom 287 were from Dublin. We ourselves designed substantial parts of this, which concentrated on environmental issues and included questions using the precise wordings of questions to be deliberated by the jury. The panel study was also completed before any aspect of jury selection began.[8] This panel study was critical because it allowed us to establish the demographic and attitudinal profile of the full set of Dublin-based IES respondents, uncontaminated by any "treatment effect" from our experiment, since both surveys were conducted before any invitation was sent out to any potential juror. We repeated this panel study on the entire IES sample in June 2004, nine months after the experiment, allowing us to measure long-

[8] The full questionnaire for the IES 2003 panel study is at www.tcd.ie/Political_Science/Staff/Michael.Marsh/ElectionStudy/INES2.pdf

term attitude shifts among jurors, as compared to those of the control group. The IES 2004 yielded 1102 responses (a response rate of 41%), of whom 273 were from Dublin.

The intention was to end up with a jury of 50 participants, broken into four sub-panels (see below), who were a random sample of citizens from the set of Dublin parliamentary constituencies serviced by the proposed incinerator. On the advice of researchers from the Economic and Social Research Institute (ESRI) – the organization responsible for the fieldwork of all aspects of the IES – we invited 221 of the original IES 2002 Dublin respondents to participate in the citizens' jury, with a view to eventually recruiting 50.[9] This reflected the ESRI researchers' estimate, based on long experience of recruiting participants for focus groups, of the "wastage" rate we could expect when inviting people to come to a central location for a substantial period of time. On the strong advice of ESRI researchers, we abandoned plans to make the deliberation a two-day event with an overnight stay in a hotel. The rationale was that the "wastage" rate for a two-day event would introduce huge biases in the jury – which would be skewed heavily towards younger and older single people and away from people with families – and that a one-day event with no overnight stay would be much less susceptible to this type of bias. Indeed ESRI researchers felt that they would be quite unable to promise us an unbiased jury for a two-day event with an overnight stay. Additionally, and also on the advice of ESRI researchers based on their experience of focus group work, we supplemented the sample with a small number of additional invitations randomly sampled from the electoral division within which the Ringsend facility was proposed. The aim was to get an over-sample on deliberation day of five jurors from the affected area, to remove the possibility – non negligible when selecting 50 people a random from the entire Dublin area – that there would be absolutely no juror with local knowledge of the area likely to be affected by the proposal. This gave a revised target size for the jury of 55 citizens.

[9] More precisely, data protection legislation in Ireland meant that we contracted the ESRI to conduct the sampling and invite selected jurors. The ESRI had previously given the standard assurances of anonymity to respondents when the IES was conducted, and it would have been illegal for them to have released the identities of respondents to third parties, such as ourselves. Indeed all aspects of jury recruitment and interviewing, and all other communications with jurors, were contracted to the ESRI. This proved to be a highly efficient arrangement.

Incentives for jurors

The invitation letters sent to those drawn as the random sample described the event and set out the incentives offered to invitees who chose to participate. As already noted, the issue for deliberation was a hot-button issue in the public gaze, one that had yet to be decided. Jurors were told that, while the deliberations of the jury would take place away from any publicity, the results of the deliberation would be widely publicized in the media.[10] Thus one incentive can be seen as being offered the chance to have some input, however small, into decision-making on this. (As we shall see, our informal debriefing at the end of the day suggests this was indeed a significant incentive in itself.) The moderator of the overall event was announced as Olivia O'Leary, a household name in Ireland and a very widely known and respected current affairs journalist with no track record of having taken a position on the issue for deliberation. The intention in picking a high-profile moderator was to signal to jurors that this was significant event. Jurors were offered €100 to cover "out of pocket costs" and the "trouble they took in taking part in the day's events".[11] They were also promised a ticket for a prize draw at the end of the event. The prize, guaranteed to be won by one of the jurors, was a €2500 credit for a holiday booked through an internationally famous travel agent.[12] Jurors were also offered free hotel parking, lunch in the middle of the day, and a "nice dinner" in the hotel at the end of it all, during which the prize draw for jurors would be held. This dinner was also intended as an informal setting for the research team to debrief jurors.

[10] Indeed it seems likely that, had there been pre-publicity, there would have been at least some form of public demonstration outside the hotel as jurors arrived. This is perhaps a useful rule of thumb for defining a hot button issue.

[11] This wording was carefully chosen because a referee report on an earlier proposal for funding from a public body had recommended rejection of the proposal on the ground that jurors were being paid, whereas deliberation is proposed as a form of participation in democratic decision-making, for which people are not paid. We persisted in the proposal to pay jurors on the ground that, in an experiment such as this, an unpaid jury of people prepared to devote an entire day to such an event would have been very seriously biased and highly unrepresentative. All incentives were entirely unconditional on anything that happened during deliberation. This research was ultimately funded, not by a public body, but by a private foundation.

[12] The lottery reward for participation is quite widely used to enhance response rates in postal surveys. In this case, we considered the c50:1 shot at a €2500 lottery to be a greater inducement than adding €50 to the flat fee for everyone. Subsequent informal debriefing of jurors strongly reinforced this view.

Deliberation day

The jury deliberation was a one-day event during which jurors would: meet together for all information and briefing sessions; have lunch together; then break up into small groups for discussions of the matters at issue; before returning to a plenary session for a final discussion and "verdict". The small-group discussions were monitored by experienced non-participant observers who coded each intervention in sequence, allowing us to plot the ebb and flow of the discussion towards consensus and relate every intervention to demographic and attitudinal data about the speaker, held in the IES and summer 2003 panel studies. As noted, we reduced our ambitions from a two- to a one-day event, held on a Sunday from 10am to 7.30 pm, to reduce selection bias in the jury. Full details of the day's schedule are given in Appendix 1. One of the main innovations we tried in this experiment was to use professional "questioners" of speakers on either side of the debate. These were well-known barristers (trial lawyers) experienced in cross-examination; the rationale was that they would ask speakers tough questions that would quickly open up the debate while at the same time keeping it structured and leaving the moderator in a fully neutral position. In addition, after all speakers had been heard, the small groups of jurors met to decide whether they wanted to ask further questions of the speakers, who were then recalled and asked these questions. In informal debriefings of jurors after the event, it became clear that they regarded the use of barristers to question the speakers as a very effective technique and we feel this is an innovation worth exploring further.

Huge efforts were made to line up speakers and briefing materials that presented, overall, a balanced view of the issues involved. Despite these efforts, which extended to many months, this aspect of the experiment must be judged something of a failure, since speakers on one side of the debate presented what everyone judged to be a much more effective case, while Dublin City Council, the responsible public authority, eventually boycotted the event and refused to participate in any way. The implicit rationale, communicated to the authors in private, was that they did not feel they could "win" a debate conducted in this type of forum – and that they would prefer not to participate at all than to participate and lose. The Irish Minister for the Environment wished us well, but declined to participate on the ground he might eventually have licensing jurisdiction

on the issue. All technical consultants used by the City Council found that they had intractable timetabling clashes on every one the very flexible set of (Sunday) dates offered for the jury schedule. In the end, we were very grateful that a former mayor of Dublin, who is a prominent member of the main government party, did at the last minute agree to present what was both the City Council and government's official policy on integrated waste management. If he had not done this, we would have been left with nobody to present and defend official government policy on this issue. The other "establishment" speaker in favour of thermal treatment was a prominent executive of IBEC, the Irish Business and Employers' Confederation. We had to go as far as the Netherlands to find a technical specialist prepared to present (very comprehensive) research findings on safety standards for modern waste incinerators. We had no problem whatsoever, however, in finding a team of highly proficient speakers to present arguments against the thermal treatment of household waste. In the event, at the end of the day the jury found unanimously against both the building of an incinerator in Ringsend, and the use of incineration as part of an integrated waste management strategy for Ireland.

JURY ATTRITION AND SELECTION BIAS

As it transpired, the ESRI's experience in the recruitment of focus groups proved directly relevant for the selection of citizens' juries. Of the 221 people invited, 61 gave a firm promise to attend the day-long event, and 51 presented themselves on the morning of the jury. In addition, exactly five of the over-sampled citizens from Ringsend also presented themselves. However, one juror failed to complete questionnaires, which leaves us with survey data on 55 participants. Hitting our target jury size so very closely was a combination of the ESRI's detailed local knowledge of the relevant attrition rates and our own pure luck. Nonetheless, it is significant that the attrition rate well known to those experienced in recruiting focus groups also appears to apply to citizens' jury experiments, which must understandably appear similar to those being recruited. The bottom line, of course, is that, of the random sample of 221 invitees, only 51 presented themselves on the

morning of jury deliberation.[13] Thus about 23 percent of those invited actually turned up for the jury, while about 84 percent of those who had promised up until the very last minute that they would turn up, actually made an appearance.

Table 1 analyzes jury attrition in terms of standard demographic characteristics. Comparing demographics for random invitees with those of the Dublin population more generally, we are reassured to see that the sample of random *invitees* had essentially the same demographic characteristics as the population as a whole. However, Table 1 does show that there were indeed biases in *attrition* rates from the original sample of invitees, in terms of age, gender and educational level. It also allows us to see whether these biases emerged at the point of agreeing to participate in the jury, or at the point of a last-minute no-show. People aged 24 or less were under-represented in the jury; this was not because they were less likely to *agree* to participate, but because they were less likely to *turn up* for the jury on the day (at 10am on a Sunday morning!), having agreed to do so. In contrast, people with lower levels of educational attainment were under-represented; but this was because they were less likely to agree to participate in the first place. People with college or university education were strikingly over-represented, both because they were more likely to agree to participate, and because they were more likely to show up on the day, having agreed. Those who identified 'home duties' as their occupation were not less likely to agree to participate but were less likely to turn up. Overall, the net result of all of this is that the eventual citizens' jury was older, more male, and better educated than the population as a whole. Relative to those invited, statistically significant differences in proportions (chi-square test) were observed for education (proportions attending compared to proportions invited) and for employment (proportions accepting compared to those invited).

<<Table 1 here>>

It seems plausible *a priori* that those who both agreed to participate in the jury and actually turned up on the morning of the deliberation were more generally inclined than the typical citizen to participation in political decision-making. A series of questions

[13] In this context it is worth noting that the ESRI team made series of phone calls to all invitees who had agreed to participate in the jury, ostensibly to keep them informed about the ongoing progress of the event but in effect to keep reminding them of what they had agreed to do. This included a final "ring-around" in the days immediately before the jury. It is difficult to see what more could have been done, other than a radical improvement in compensation rates, to increase participation levels.

relating to political efficacy were asked in the IES. The IES also asked whether respondents had voted in each of the three opportunities to do this at a national level in the 12 months prior to the survey – the 2002 general election and two national referendums. Voting turnout in these three polls was aggregated to create a four point "voting rate" scale that ranged from 0 (no turnout in any of the three elections) for the most lethargic voters, to 3 (turnout in all three elections) for the most avid.

Table 2 compares the set of jurors who turned up on the day with the general Dublin citizenry on each of these measures. Note that all of these attitudes relate to responses in the IES collected long before the start of any "treatment" of the jurors, by writing to them asking them to participate in a jury. This table shows that the jurors were not any more prone to vote than Dublin citizens in general; they were no more likely to think they were better informed about politics; and they were no more or less prone to think that politics makes a difference. However, they *were* less likely to agree that politics is too complicated for people like them to understand, and they were also less likely to agree that ordinary people have no influence on politics. In this sense they can be seen to have a higher sense of *personal* efficacy, perhaps making them open to other forms of political participation.

<<Table 2 here>>

We can go beyond this to investigate the extent to which the attrition effects resulted in a jury with unrepresentative attitudes on the precise matter for deliberation. *A priori*, it certainly seems plausible that those jurors who presented themselves were more interested than the general population in environmental issues generally, and the thermal treatment of waste in particular, since these attitudes made them more likely to participate in the jury deliberation. Table 3 offers some answers to this question, comparing the environmental attitudes of those 39 jurors who both presented themselves and also completed the summer 2003 IES panel survey, with the overall group of 287 Dublin citizens who completed this panel survey. The citizens' jury, while certainly not perfectly representative demographically, does appear to have been representative attitudinally – at least as far as relevant attitudes prior to the beginning of the jury process were concerned. It was simply not the case that jurors were more interested in the environment, or had distinctive attitudes on this, compared to the control group.

<<Table 3 here>>

In short, we conclude that there were indeed jury attrition effects – in favour of older, male and better educated citizens (although differences were not significant for age and gender) – and that jurors may have had a somewhat higher sense of personal efficacy than the typical citizen. But these effects did not result in a jury with attitudes that were unrepresentative, either on general environmental issues or on the precise questions that were up for deliberation.

OPINIONS BEFORE AND AFTER DELIBERATION

Previous studies have reported statistically significant opinion change between the pre and the post-test questionnaire, at both the aggregate ('net change') and the individual ('gross change') level (see for instance Fishkin 1995; Luskin, Fishkin & Jowell 2002; Merkle 1996; Goodin & Niemeyer 2003; Hansen & Andersen 2004). In some cases a control strategy has been built into the research by means of self-administered or telephone surveys of non-attendees in the original sample, or with separate random samples – surveyed either before, or after, or both (see Luskin, Fishkin & Jowell 2002; Merkle 1996; Hansen & Andersen 2004). Here, we continue this line of research in reporting the scale of the aggregate-level opinion shifts during the Dublin jury event, while using the larger panel as a control group. Table 4 makes two sets of paired comparisons on three selected attitude questions, the two precise questions for deliberation and the statement that "I would be happy to see my household waste treated in a waste incinerator". For each of these three questions, two pairs of comparisons are reported. The first compares attitudes in the summer IES 2003 panel, before any mention had been made of the jury, with attitudes on the morning of the jury. This comparison picks up any treatment effect arising from being selected as a juror and deciding to participate. The second pair compares attitudes in the morning, before the event, with attitudes in the evening, after the event was over and the jury decision had been reached. This picks up the treatment effect of the deliberation itself. In each case, the earlier attitude score is subtracted from the later score. With relatively high scores implying

greater support for incineration, a negative sign implies a shift against incineration. (More detailed statistics for this table can be found in Appendix 2.)

<<Table 4 here>>

The findings are unambiguous. There was no significant treatment effect from having been selected as a juror and having decided to participate (Pairs 1, 3 and 5). But we can see a strong treatment effect following participation in the days' events (Pairs 2, 4 and 6). Jurors showed a substantial and statistically significant shift of opinion against waste incineration. Substantively, the shift on each scale was large, from a mean position of neutrality on the attitude statement (scale position 4) to a position between disagreement (2) and strong disagreement (1). Thus the strong opinion shifts observed in other experiments were replicated in the Dublin experiment.

Considering the extent to which these opinion shifts are representative of the more general citizenry is of course a somewhat artificial exercise since the more general citizenry could not conceivably engage in an exercise in small group deliberation of this type. What we can do, however, is analyse the extent to which different opinion shifts occurred among demographic groups in the jury for which we know there is biased representation. Recall that the jury was biased towards men, towards older people, and towards people who had completed higher levels of education. We could find absolutely no gender effect on the opinion shifts following deliberation. Opinion shifts were about half a scale point higher for those under 45 than for those over 45, but these effects were not significant statistically. However, all opinion shifts were significantly greater for jurors who had not completed their education to the level of the Irish leaving certificate (marking the end of secondary education and providing the qualification for admission to university).[14] Table 5 shows these effects.

<<Table 5 here>>

Recalling from Table 1 that voters with lower levels of education were substantially under-represented in the jury, we can infer from this that opinion shifts following deliberation might have been even higher than those observed, had the jury contained the proportions of citizens without a high school leaving certificate that are found in the

[14] The level of educational attainment in the population declines with age. However an OLS regression predicting total opinion shift during deliberation – measured on the 18 point scale in the final column of Table 6 – from gender, age and educational level shows that the education effect is independent of age.

general Irish population. Since all demographic groups substantially shifted their opinions in the same direction, however, this would have had no substantive effect on the eventual jury "verdict" in this particular case.

DURABILITY OF SHIFTS IN DELIBERATED ATTITUDES

Nine months after the experiment, and as part of the 2004 panel of the Irish Election Study, the jury participants, along with all other members of the IES panel, were re-surveyed on the two issues that were subject to deliberation. Fishkin (1995; appendix to the paperback edition) and Hansen and Andersen (2004) report ten and three month follow-ups respectively, though without a post-test control group for comparison. Table 6 shows that jurors did change their attitudes significantly in the nine months following the deliberation. There was a statistically significant shift in the opinion of jurors on both questions deliberated, in each case back in favour of incineration (pairs 1 and 3). This was in effect a moderate reversal of the opinion shift observed during deliberation. However, using the larger Dublin IES panel as a control group, it is also clear that, nine months after the jury deliberation, jurors remained substantially more opposed to incineration than Dublin residents generally (pairs 2 and 4), a difference with strong statistical significance. Recall that the jury was not initially more interested in the environment than the Dublin control group as a whole, and did not have distinctive attitudes on the issues for deliberation (see Table 2 above). Table 6 thus provides systematic evidence that, while there was some opinion reversal nine months after the "jury effect", the deliberation did have significant long-term effects on the attitudes of jurors on the matters under deliberation.

<<Table 6 here>>

WHAT DROVE OPINION CHANGE?

As Luskin, Fishkin and Jowell (2002) note, the rationale of deliberative events requires that opinion changes "be not merely random bouncing around, nor the outgrowth of some purely social dynamic, but rather the product of learning and reflection" (2002, 474). The

premise upon which such events are organized is that the resulting "deliberated" opinions will be more considered, as a consequence of increased interest in the issues, increases in knowledge, the exposure to diverse arguments and perspectives, and more careful reflection. Here we consider the question of what drove opinion change in the event, first by replicating Luskin, Fishkin and Jowell's (2002) regression modelling, and second, by discussing the framing problem that compromised the jury verdict.

The concern about social dynamics arises in the context of findings from social psychology experiments, which show that individuals in groups are prone to errors and biases that correlate with manipulations or variations in the behaviour of other group members. More specifically, it arises from the literature on group polarisation, summarised by Sunstein (2000). Group polarisation occurs where "members of a deliberating group predictably move toward a more extreme point in the direction indicated by the members' predeliberation tendencies" (Sunstein 2000, 74). The effect of deliberation is also to decrease variance among group members. Group polarisation is troubling because the mechanisms postulated to account for the phenomenon have a detrimental effect on reasoning. The first is *social comparison*, which is based on the claim that since people want to be perceived favourably by others, and to perceive themselves favourably, they tend in effect to "echo" one another in expressing the dominant view. The second is *limited argument pools*, whereby a preponderance of arguments supporting one view will be expressed in situations where a majority of group members begin from a position of being already in favour of that view. In the case of social comparison, polarisation is troubling because it is *not* a function of subjects considering the arguments made during the course of deliberation but, rather, of their desire to conform. In the case of limited argument pools, polarisation is a concern because it is a function of *deficient or incomplete* arguments. Regardless, the effect is shift the median view in the group to a more extreme point in the direction of the predeliberation median.

We thus created an opinion change variable for each of the two main issue items, by subtracting each individual's scale position for the item according to the evening resurvey, from their position according to the morning presurvey. We then replicated Luskin, Fishkin and Jowell's model in which information gain and small group

mechanisms were used as independent variables. In the original model, information gain is proxied using a measure calculated from seven knowledge items, scored 1 for each correct answer and 0 for each incorrect. The writers note that the most obvious measure might seem to be the difference in correct answers between the post and the presurvey ($I_2 - I_1$), but this is likely to be negatively correlated with information gain, since, as the psychology and communications literature suggests, the "the information-rich get information-richer" (2002, 480).[15] That is, those who are able to answer all or most of the items correctly at the beginning are most likely to learn more still, yet subtracting their later from their earlier score would give them a low or zero score. Luskin, Fishkin and Jowell instead use correct answers at Time 2: "The participants with high information scores at Time 2 have all presumably gained a lot of information, either observably, because they started much lower, or, unobservably, because they started high" (2002, 480). Accordingly, we use a measure of information about the issue under deliberation from the evening resurvey. Our knowledge items were not demanding. Before and after deliberation, participants were asked: 1) what happens to the majority of household waste that is collected in their area (the alternatives given were 'buried in a landfill site'; 'burnt in an incinerator'; 'recycled'; 'don't know'); and 2) who is mainly responsible for dioxin emissions ('incineration plants', 'industry', 'households', 'don't know'). The correct answers were landfill and households respectively.[16] Respondents were scored 0 for no correct answers, 1 for 1 correct answer, and 2 for answering both correctly. Table 8 reports juror's information levels, following jury deliberation.

<<Table 7 here>>

[15] Luskin, Fishkin & Jowell cite the following: J. D. Dooling and R. Lachman, 'Effects of Comprehension on Retention of Prose', *Journal of Experimental Psychology*, 88 (1971), 216–22; J. D. Bransford and M. K. Johnson, 'Contextual Prerequisites for Understanding Some Investigations of Comprehension and Recall', *Journal of Verbal Learning and Verbal Behavior*, 11 (1972), 717–21; H. L. Chiesi, G J. Spilich and J. F. Voss, 'Acquisition of Domain-Related Information in Relation to High and Low Domain Knowledge', *Journal of Verbal Learning and Verbal Behavior*, 18 (1979), 257–73; S. T. Fiske, R. R. Lau and R. A. Smith, 'On the Varieties and Utilities of Political Expertise', *Social Cognition*, 8 (1990), 31–48; R. W. Neuman, 'Patterns of Recall among Television News Viewers', *Public Opinion Quarterly*, 40 (1976), 115–23; V. Price and J. R. Zaller, 'Who Gets the News: Alternative Measures of News Reception and Their Implications for Research', *Public Opinion Quarterly*, 57 (1993), 133–64; K. Viswanath and J. R. Finnegan Jr, 'The Knowledge Gap: Twenty-Five Years Later', in B. R. Burlson, (ed.), *Communication Yearbook* (Thousand Oaks, Calif.: Sage Publications, 1996).

[16] The source used for the claim that households are the largest single source of dioxin emissions was the EPA's (2002) "Inventory of Dioxin and Furan Emissions to Air, Land and Water in Ireland for 2000 and 2010".

To capture group mechanisms operating on individuals, pressuring them to alter their preferences in the direction of the group, Luskin, Fishkin and Jowell use the difference between a participants' presurvey opinion on a given issue scale, and the mean presurvey opinion within the small group to which he or she was assigned ($P_1 - G_1$). (Means are calculated for other group members, excluding the particular individual for whom the score is calculated, and consequently vary slightly for individuals in the same group.)

The rationale is that group pressure on an individual should be proportional to the extent to which that individual is an outlier. If pressure to conform affects individuals' views, then the expectation is that those who are most distant from the group mean will move most, to reduce the gap between themselves and the group mean. We follow this method ($P_1 - G_1$) in scoring a group variable, but also introduce a second variable. Non-participant observers coded the sequence of interventions in each small group, noting for each intervention the identification number of the contributor and whether the contribution concerned incineration in general or the Ringsend incinerator. They also coded the content of the contribution on a 5-point scale (strongly against, against, neither against nor for, for, strongly for).[17] We use mean score of group contributions as a measure of the direction of group pressure exerted specifically within the group session, again calculated for each individual by excluding that individuals' own contributions and averaging across the remaining contributions.

Table 8 below is a replication of Luskin, Fishkin and Jowell's Table 7. Contrary to their findings, the post-deliberation level of information has no significant effect. However, this may be due to the comparatively restricted variation in our version of this variable. Luskin, Fishkin and Jowell use a 7-item and hence 8-point scale, where we are obliged to use a 2-item, 3-point scale. The variable measuring the extent to which the individual was initially an opinion outlier in the group, on the other hand, is significant both statistically and substantively, for both the incineration and the Ringsend issue, and correctly signed (Part A below). Individual attitudes do move towards those of the group

[17] A reliability test was performed. Two of the observers separately coded contributions by jurors during the final plenary session. The inter-coder reliability between the two was high (Pearson's $R = 0.972$; significant at .01), though the number of contributions made was low ($n = 16$).

as a whole. An initial unit difference between P_1 and G_1, is followed by a movement of between 0.6 and 0.7 in the direction of G_1.

This apparent group effect however, as pointed out by Luskin, Fishkin and Jowell, may be due to the presence of P_1 in both the dependent ($P_2 - P_1$) and independent variable ($P_1 - G_1$). In their original analysis, when P_1 and G_1 are treated as separate regressors, the coefficients of G_1 become attenuated and insignificant for 3 of 5 issue indices. When this second part of the model is replicated here, the effect is shown to reside in P_1 alone while G_1 is has no significant effect. The significant coefficient for P_1 tells us that those who were initially most in favour of (or least opposed to) incineration at the beginning of the day, changed their opinion the most, having more ground to cover if they were to share in the consensus against incineration. The extent of this movement was not, however, correlated with starting group means. Furthermore, our second group variable (mean contribution made in the group discussion) has no significant effect for either item. On the basis of these results, therefore, we conclude that small group effects of the type investigated by earlier authors did not account for opinion change within the Dublin citizens' jury.

<<Table 8 here>>

Modelling small group effects using $P_1 - G_1$ assumes that the group effects have an immediate impact individual's opinions. This does capture the way deliberative polls work, where small group deliberations precede question and answer sessions, but it was not the case in our shorter jury event (deliberative polls typically last several days). A morning session of presentations and questioning of speakers intervened between the presurvey and the small group deliberations in the afternoon. Had the participants been resurveyed after the speaker session and before breaking into groups, their views could have already been quite different to the presurvey (see also Goodin & Niemeyer (2003) who find in their citizens' jury that participants' views changed more in the course of the 'information' phase than as a result of the 'deliberation' phase). We strongly suspect that this would have been so, since, as we have described above and discuss below, the speaker session came to be seen as a very one-sided process. The strong swing against incineration must be understood in this context, and not, as we have seen, attributed to group effects.

Framing has been a concern in deliberative experimentation, expressed at two levels. First, where decisions about whether or not to convene a jury are made by government bodies or sponsoring organisations, then on some issues these bodies may keep some alternatives off the agenda simply by *not having* a jury on those issues, or by *framing the question* or "charge" in a particular way (see the comparison of the Swiss 'PubliForum' on electricity and society with the French 'Conference de Citoyens' in Mrenowicz 2001; see also Crosby 1995). Second, there is the danger of bias due to the omission or distortion of relevant *information*. Hence stipulations for the independence of the convening body (Rowe and Frewer 2004), or design and oversight by a balanced panel of stakeholders (Satya Murty and Wakeford 2001; Smith & Wales 2000).

We chose the incineration issue, since, as a live and potentially divisive "hot-button" issue, it provided a critical case for the jury model. What we found as a result (as described above) is that a situation developed whereby those who should have been present to argue for the incineration option refused to attend, while those who spoke against it appeared wholly committed, and were judged, essentially, to have been much more effective public speakers. While our views on this derive partly from our own impressions, formed from attending the event, and partly from informal debriefing of the jurors, we found clear confirmation of this in the answers to an open resurvey item in which participants were asked to identify the reasons for the jury's decision. 34 of the 55 jurors made reference to what they viewed as the poor presentation of the pro-incineration argument, and we report selected comments that capture this sentiment in Table 9 below. Note that respondents were not prompted to evaluate or criticise the speakers, but were simply asked what the reasons for the decision were. Even on a generous interpretation, in 18 cases respondents made no mention of substantive concerns at all, only mentioning the speaker issue. In short, the unanticipated result of selecting the issue that we did was the creation of framing effects that made rejection of the incineration option much more likely, and because of this, we cannot commend the jury decision as reflecting a full consideration of the issues that were deliberated.

<<Table 9 here>>

DISCUSSION AND CONCLUSIONS

Starting from the random sample of invitees drawn from the 2002 IES, there was a systematic process of jury attrition that seems very similar to the more familiar attrition rate of people selected randomly to participate in focus groups. Only about one quarter of those invited eventually participated; this was despite considerable efforts, in terms of regular phone calls, to maintain the interest of those who initially agreed to participate. The result was a set of jurors who were older, more male, and educated to a higher level than the citizenry they were ostensibly representing. This attrition process also resulted in a jury with a slightly higher sense of personal efficacy than the population as a whole, though not a jury that was more prone to vote in elections. Despite these demographic biases arising from jury attrition, however, there appears to have been no "attitudinal bias" in the jury. The demographic bias we observed may have had an impact on the susceptibility of jurors to attitude shifts during deliberation – under-represented groups, especially the less-educated, were more susceptible to attitude shifts than over-represented groups. This part of our study suggests that it is possible, with a careful research design, to take control of, estimate, and potentially correct distortions in the citizens' jury process that arise from jury selection and attrition. The post deliberation panel study showed that, while there was a modest "shift-back" in attitudes in the nine months following the deliberation, opinion shifts that occurred during deliberation were for the most part durable. Nine months after the deliberation event, the panel of deliberators had attitudes that differed significantly from those of the control group.

Despite enormous efforts to create a balanced presentation of the issues, however, we did not succeed in achieving this. We feel that our experience in this regard has significant implications for the empirical evaluation of deliberative experiments in real-world settings. Firstly, the "framing" of any particular jury deliberation involves a huge range of variables, which makes it very difficult to build up cumulative research findings on the process of deliberation itself. We can of course conduct laboratory research, but our interest in investigating the effects of deliberation has more to do with its commendation for use in real world contexts, which has led to the suite of action research experiments, of which this study is a part. There are however so many degrees of freedom

in designing a deliberative "experiment" that it is difficult even to identify, much less control, salient features of experimental design. This greatly impedes the systematic accumulation of knowledge on the process as a whole. This problem is exacerbated by the fact that each jury experiment is expensive, time-consuming and, at least in this case, exasperating to organize.[18] Nevertheless, we could do more to try to integrate the social psychology literature into deliberative research, particularly, arising from our study, the work on speaker effects in persuasive communications. Not having anticipated the scale of what happened, we had not prepared ourselves to ask participants to rate the speakers on various separable dimensions – from speaker attractiveness, to trustworthiness, to perceived conviction and so on. Nor had we prepared ourselves to operationalise relevant factors like speed of delivery, or fear arousal (see Hogg and Vaughan (2005, 203) for citations). Perhaps ours is an unusual case, but on the other hand, further research in which these variables are included in models like the one replicated above, might show that they account for some portion of opinion change at least some of the time. This would be troubling to the extent that these factors introduce an information bias that the use of balanced briefing materials and ostensibly balanced panels of speakers is supposed to circumvent. The problem of course is that while we might be able to identify the effect of these factors after the event, it is not clear how we could attempt to correct for them in advance in the way that we may be able to do for selection bias and attrition.

The problem however, is more than one of research design. Deliberation, in the deliberative democracy literature, is meant to provide an alternative model to the "strategic manipulation and maneuvering that is often characteristic of contemporary politics" (Smith & Wales 2000, 53); an alternative in which "interactions are egalitarian, uncoerced, competent, and free from delusion, deception, power and strategy" (Dryzek 1990, 202; cf. Smith & Wales 2000). On divisive issues however, some parties may have an interest in de-legitimising the process, assuming, that is, they agree to participate at all. Yet, if obstructive behaviour by key stakeholders can in effect invalidate the results of deliberation, this gives such stakeholders an effective veto over the use of deliberative

[18] For the record, the experiment reported here was two years in the planning and execution and had an out-of-pocket cost of €38,100 (about $50,000), in addition to the salaries and overhead of the researchers and administrators involved. All IES surveys, including the panel study dedicated to this experiment, were paid for from other sources. As a stand-alone project forced to pay completely for itself, therefore, the jury would have cost at least €100,000.

methods of reaching collective decisions and, in turn, undermines the value of deliberative methods more generally. Carried to its logical extreme, this argument might be taken to imply that deliberation can only be used for issues on which key stakeholders do not gave intense and divergent interests – crudely, that deliberation is most likely to be successful when it is least needed.

We could of course have picked an unimportant issue that nobody cared about – but if this is the only setting in which deliberation works in an unbiased way, it would not be an encouraging conclusion. It is of course also possible that, if the jury had been making a decision that was guaranteed to be implemented, then all sides would have had an incentive to participate in the most effective possible way. This would not negate the possibility that one side of the case would be better presented than the other, but it would remove the possibility that one side would attempt to undermine the deliberative process if it feared being on the eventual losing side. The Catch-22 in this regard is that, before we can feel confident in recommending the use of citizens' juries for making binding or compelling decisions in real-world settings, we need systematic research on how this process works – while the danger is that, when it deals with the divisive issues for which it might appear most valuable, research on non-binding deliberation runs the risk of the framing effects that we experienced in the case we have reported above.

We conclude, however, on a more up-beat note. The Dublin Citizens' Jury was seen as an unqualified success in the eyes of the jurors themselves, virtually all of whom were very enthusiastic indeed about being asked to participate in a decision making process such as this, very much enjoyed the day, and urged us to do it all again as soon as possible for a range of different issues. The post-jury dinner, attended by 55 randomly selected Dubliners from all walks of life, was an extraordinary "event" in itself. Inclusive decision-making procedures such as citizens' juries do very clearly give participants a heightened sense of citizenship. As effective exercises in localized civic education, there is a lot to be said for them. However, where framing is likely to be significant, it remains an open question whether they are anything more than this.

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Table 1: Demographic characteristics of jury attrition

	Dublin IES2002 *n* = 499		Random invitees *n* = 221		Willing jurors *n* = 61[Ψ]		Actual jury *n* = 55[‡]	
	n	%	n	%	n	%	n	%
Marital status								
Married/Partner	300	60.1	136	61.5	43	70.5	35	63.6
Separated/Divorced	18	3.6	5	2.3	1	1.6	1	1.8
Widowed	37	7.4	19	8.6	4	6.6	5	9.1
Never Married	144	28.9	61	27.6	13	21.3	14	25.5
Age								
18-24	77	15.4	35	**15.8**	9	**14.8**	5	**9.1**
25-44	179	35.9	73	33.0	19	31.1	19	34.5
45-64	170	34.1	71	**32.1**	25	**41.0**	22	**40.0**
64+	73	14.6	42	19.0	8	13.1	9	16.4
Gender								
Male	252	50.5	115	**52.0**	34	**55.7**	33	**60.0**
Female	247	49.5	106	**48.0**	27	**44.3**	22	**40.0**
Education level								
Pre-Leaving Cert.	175	35.1	84	**38.0**	16	**26.2**	12	**21.8***
Leaving Cert.	110	22.0	54	24.4	18	29.5	11	20.0*****
Post Leaving Cert.	214	42.9	83	**37.6**	27	**44.3**	32	**58.2***
Employment								
At work	317	63.5	140	63.3*****	39	63.9	33	60.0
Unemployed	14	2.8	6	2.7*****	3	4.9	2	3.6
Student	29	5.8	11	5.0*****	3	4.9	4	7.3
Retired	78	15.6	40	18.1*****	11	18.0	10	18.2
Home Duties	49	9.8	18	**8.1***	5	**8.2**	2	**3.6**
Other	12	2.4	6	2.7*****	0	0	4	7.3
Total	**499**	**100.0**	**221**	**100.0**	**61**	**100.0**	**55**	**100.0**

[Ψ] Plus 5 people of unknown characteristics from DEDs in Ringsend: of whom four are male and one is female.

[‡] Including 7 Ringsend jurors

***** Difference in proportions compared to proportions invited (random invitees column) significant at 0.05 (chi-square test).

Table 2: Attitudes towards participation/efficacy among jurors and all Dublin IES respondents

	Dublin IES2002 (n = 499)		Actual jury (n = 55)	
	Mean	Std. Dev.	Mean	Std. Dev.
Politics is too complicated for people like me to understand	4.06	1.90	3.16	1.46
The ordinary person has no influence on politics	3.75	1.90	3.18	1.53
I'm better informed than most people about politics	3.51	1.63	3.48	1.58
Irish government can't influence what happens in this country	3.08	1.62	3.07	1.37
It doesn't really matter which political party is in power	4.04	1.83	3.95	1.75
Times voted 2001-2002 (0,1, 2 or 3)	2.01	1.08	1.95	1.24

All items scored on a seven-point scale with 1 strong disagreement and 7 strong agreement

Table 3: Environmental attitudes among jurors and all Dublin IES respondents

	Dublin panel IES2003 (n = 287)	Actual jury (n = 39)
	Mean	Mean
Concerned about environmental issues (4-point scale)	1.72	1.74
Member of environmental organization/would join one (3-point scale)	2.51	2.44
Signed petition on environmental issues (2-point scale)	1.61	1.59
Given money to environmental group (2-point scale)	1.78	1.74
Taken part in protest on environmental issue (2-point scale)	1.94	1.95
"I do what's right for environment"	5.36	5.23
"More important things to do than protect environment"	2.76	2.67
"Waste incinerators are an essential part of waste management"	4.55	4.54
"A waste incinerator should be built in Ringsend"	4.06	3.79
"Happy for my household waste to be treated in incinerator"	4.46	4.24

Table 4: Opinion shifts during citizens' jury event

	Question	Mean shift	t	Sig. (2-tailed)
Pair 1	Waste incinerators are essential to waste management in Ireland: (morning) - (panel)	0.03	0.13	.895
Pair 2	Waste incinerators are essential to waste management in Ireland: (evening) - (morning)	-2.42	11.59	.000
Pair 3	A waste incinerator should be built in Ringsend: (morning) - (panel)	0.30	1.15	.260
Pair 4	A waste incinerator should be built in Ringsend: (evening) - (morning)	-2.04	9.64	.000
Pair 5	I would be happy to have my waste treated by incinerator: (morning) - (panel)	0.14	0.70	.491
Pair 6	I would be happy to have my waste treated by incinerator: (evening) - (morning)	-2.15	9.06	.000

All attitudes are measured on seven point scales, with 1 strong disagreement and 7 strong agreement

Table 5: Relationship between educational attainment and size of opinion shift

Education level	Incinerators essential to waste management (evening minus morning)	Ringsend incinerator necessary (evening minus morning)	Happy to see my own waste incinerated (evening minus morning)	Total shift on waste management + Ringsend + Own waste
No leaving certificate	-3.25	-3.00	-3.09	-9.30
Leaving certificate plus	-2.18	-1.79	-1.91	-5.88
F	4.739	5.786	4.298	6.063
Sig	.034	.020	.043	.017
Total	-2.42	-2.04	-2.15	-6.53

Note: a negative shift on the seven point scales is a shift towards disagreement with the statement.

The scale in the final column runs from 3 to 21

Table 6: Opinion shifts between the jury event and the 2004 IES panel study

	Question	Mean shift	t	Sig. (2-tailed)
Pair 1	Waste incinerators are essential to waste management in Ireland (Jury 2004) - (Jury deliberation evening)	+0.85	2.82	.007
Pair 2	Waste incinerators are essential to waste management in Ireland (Dublin 2004) - (Jury 2004)	+1.71	5.18	.000
Pair 3	A waste incinerator should be built in Ringsend (Jury 2004) - (Jury deliberation evening)	+0.56	2.41	.043
Pair 4	A waste incinerator should be built in Ringsend (Dublin 2004) - (Jury 2004)	+1.72	5.07	.000

All attitudes measured on 7-point scales, with 1 strong disagreement and 7 strong agreement

Table 7: Knowledge items correct at time of evening postsurvey

	n	%
No items correct	1	2
1 item correct	38	70
2 items correct	16	29
Total[†]	55	

[†] Fails to sum to 100% due to rounding

Table 8: Accounting for attitude change

Explanatory variable	Incineration	Ringsend incinerator
Part A: With the difference between t_1 attitude and t_1 small group mean as one variable		
Intercept	-3.038**	-1.542
	(0.660)	(0.578)
t_2 Information	0.473	0.049
	(0.327)	(0.296)
Distance from t_1 group mean	-0.638**	-0.703**
	(0.101)	(0.079)
Mean contribution in the group	-.017	- 0.515
	(0.434)	(.368)
Adjusted R^2	0.429	0.593
F	14.535	26.723
Probability	0.000	0.000
Part B: With t_1 attitude and t_1 small group mean as separate variables		
Intercept	-0.223	-1.87
	(2.022)	(1.617)
t_2 Information	0.505	0.062
	(0.324)	(0.297)
t_1 Attitude	-0.686**	-0.732**
	(0.105)	(0.085)
t_1 Group mean	-0.004	0.306
	(0.447)	(0.448)
Mean contribution in the group	-0.125	- 0.335
	(0.435)	(0.420)
Adjusted R^2	0.442	0.591
F	11.691	20.166
Probability	0.000	0.000

Table replicated from Table 7 of Luskin, Fishkin and Jowell (2002); with one additional variable (mean contribution in the group). Cell entries show coefficient estimates with standard errors in parentheses. N = 55 in all cases

* Significant at the 0.05 level. (2-tailed)

** Significant at the 0.01 level (2-tailed)

Table 9: Reasons for the jury's decision – selected juror's comments

As there was no argument for the incineration plant and, the argument "against" was brilliantly delivered to the jury, I agree with the alternative

No representative of the govt or city took part in the presentation in favour of incineration of household waste. Those opposed to the motion made a much stronger case.

The arguments "against" were informative, compelling & v. strong - the arguments "for" were the opposite - the decision was further fuelled by a lack of representation from Dublin City Council & Govt.

There was a very weak argument for incineration. People were annoyed at the lack of govt participation

Lack of pro-arguments for incineration, scare tactics and statistics used by the "against" party. Peoples' lack of knowledge initially and then receiving only one strong view

The case against incineration was well presented by people in clear possession of the moral high ground, while the case "For" was presented very badly & with no conviction

A substantially one sided presentation where utopian views were not balanced by realism

The anti-incineration side presented their case as if they believed they were right but the pro-incineration case lacked conviction and on the evidence presented the authorities (dept of environ, local councils and EPA) cannot be trusted

After hearing evidence on both sides of the argument it was obvious there was only going to be one decision and this was a resounding no to both questions

Lack of trust in the govt. and authorities to monitor & regulate. The presentation on behalf of the "for side" was poorly made and lacked conviction & provided little info. Conversely, the "against" were articulate, succinct & believed what they said

The lack of information for the pro-incinerator side – the lack of govt commitment to the discussion and the eloquence of two of the anti-incinerator speakers

Note: spelling and some grammatical errors have been corrected but abbreviation has been retained

APPENDIX 1: TIMETABLE OF EVENTS

10.00-10.30am: Registration of jurors.

Coffee on arrival. Self-completion of short questionnaire by jurors, facilitated by experienced interviewers from the ESRI.

10.30am-1.30pm: Morning session

Members of the jury assemble to hear evidence and argument about the issue of waste incineration. This will include evidence from politicians and policy makers speaking on both sides of the issue, as well as scientific experts from overseas with direct experience of incineration, who will also present evidence on both sides of the case. A professional "questioner" will be appointed for each side of the case – to put the hard questions to the witnesses after they have spoken.

1.30-2.00pm: Buffet lunch

During an informal buffet lunch, jurors will be encouraged discuss the morning's evidence with each other.

2.00-2.30pm: First small group sessions

The jury will break up into four small groups, each with a facilitator, to get to know each other and for a brief discussion of whether the witnesses need to be asked any more questions.

2.30-3.00pm: Recall of witnesses

The witnesses will be recalled if requested to answer these additional questions from jurors. Witnesses are free to go after this, though will be free to observe, though not participate in, the jury's deliberations.

3.30-5.00pm: Second small group sessions

The jurors will break up again into small groups, with facilitators. Each group will discuss matters among themselves and will be encouraged to try and come to a common view on the questions at issue, together with reasons for coming to that view. They should choose a spokesperson or spokespersons to report their views and reasoning to the full jury. If they cannot agree on a single common view, they may choose to present two conflicting views.

5.00-5.30: Tea/coffee break

5.30-7.00pm: Plenary session of jury

The full jury will come back together for a full discussion of the issue. This will begin with a report on the conclusions of each small group, together with the reasons for this. There will then be open discussion among the jury as a whole. The jury will be instructed to make every effort to come to a consensus verdict on the issues at stake. If it simply cannot do this by the end of the evening, the jury may then record a split decision.

7.00-7.30: Debriefing

Self-completion of short questionnaire by jurors, facilitated by experienced interviewers from the ESRI. Jurors will be paid the €100 promised to cover their out of pocket costs and the trouble they took in taking part in the day's events. They will also be given a ticket for the prize draw.

7.30: Dinner

Everyone will be rewarded with a nice dinner, at the beginning of which the prize draw for jurors will be held. The prize will be a €2500 credit for a holiday booked through Thomas Cook, Grafton Street.

MODERATOR

Olivia O'Leary

IN DEFENCE OF INCINERATION AS PART OF AN INTEGTRATED WASTE MANAGEMENT STRATEGY FOR IRELAND

Pat Carey TD (Fianna Fáil, Dublin North West. Former Lord Mayor of Dublin)
Donal Buckley (Head of the Environment Unit, Irish Business and Employers' Confederation))
Toon Ansems (Emission Assessment Department, TNO Consultants, the Netherlands)

AGAINST INCINERATION AS PART OF AN INTEGTRATED WASTE MANAGEMENT STRATEGY FOR IRELAND

John Gormley TD (Green Party, Dublin South East)
Tom Prendeville (Earthwatch Ireland)
Paul Connett (Professor of Environmental Chemistry, St Lawrence University, New York)

QUESTIONERS

Colm MacEochaidh, BL (questioning advocates of incineration)
Noel Whelan, BL (questioning opponents of incineration)

APPENDIX 2: JURY TREATMENT EFFECTS ON MATTERS FOR DELIBERATION

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	waste incinerators essential to waste management in Ireland (morning)	4.56	39	1.334	.214
	(prior panel)	4.54	39	1.620	.259
Pair 2	waste incinerators essential to waste management in Ireland l (morning)	4.31	55	1.502	.202
	(evening)	1.89	55	1.227	.165
Pair 3	waste incinerator should be built in Ringsend (morning)	4.03	37	1.343	.221
	(prior panel)	3.73	37	1.661	.273
Pair 4	waste incinerator should be built in Ringsend (morning)	3.69	54	1.635	.222
	(evening)	1.65	54	1.049	.143
Pair 5	happy to have my waste treated by incinerator (morning)	4.38	37	1.605	.264
	(prior panel)	4.24	37	1.770	.291
Pair 6	happy to have my waste treated by incinerator (morning)	4.19	54	1.727	.235
	(evening)	2.04	54	1.317	.179

APPENDIX 3: DEMOGRAPHIC ATTRIBUTES OF TREATMENT EFFECTS

	Incinerators essential (evening - morning)	Ringsend necessary (evening - morning)	Happy to see own waste incinerated (evening - morning)	Total shift on incinerators + Ringsend + own waste
Gender				
Male	-2.36	-2.22	-2.03	-6.47
Female	-2.50	-1.77	-2.33	-6.62
Age group				
18-24	-2.60	-2.00	-1.80	-6.40
25-44	-2.58	-2.42	-2.58	-7.58
45-64	-2.41	-1.64	-1.90	-5.95
65+	-2.00	-2.25	-2.00	-5.63
Education level				
Below leaving certificate	-3.25	-3.00	-3.09	-9.30
Leaving certificate	-2.09	-1.36	-2.27	-5.73
Above leaving certificate	-2.22	-1.94	-1.78	-5.94
Total	-2.42	-2.04	-2.15	-6.53

No gender or age group classifications significant statistically

All differences between leaving certificate and sub-leaving certificate significant at < 0.05

APPENDIX 4: STABILITY OF JURY OPINION SHIFT

Paired Samples Statistics

			Mean	N	Std. Deviation	Std. Error of Mean
Pair 1	Waste incinerators essential for waste management in Ireland	(evening)	1.89	55	.599	0.081
		(IES2004 jury)	2.74	38	1.781	0.289
Pair 2	Waste incinerators essential for waste management in Ireland	(IES2004 jury)	2.74	38	1.781	0.289
		(IES2004 panel)	4.45	271	1.926	0.117
Pair 3	Waste incinerator should be built in Ringsend	(evening)	1.65	55	1.040	0.140
		(IES2004 jury)	2.21	38	1.58	0.256
Pair 4	Waste incinerator should be built in Ringsend	(IES2004 jury)	2.21	38	1.58	0.256
		(IES2004 panel)	3.93	272	2.002	0.121