

Can the internet overcome the logic of collective action? An experimental approach to investigating the impact of social pressure on political participation

Helen Margetts* Peter John Tobias Escher* Stephane Reissfelder***

*Oxford Internet Institute, University of Oxford

**School of Social Sciences, University of Manchester

Paper to the Political Studies Association Annual Conference, 7-9 April 2009, University of Manchester

Panel: *Changing Political Attitudes and Behaviour: Evidence from Experiments*

Abstract

This paper investigates the impact of the internet upon individual contributions to collective action. It examines how political participation may be stimulated by one particular characteristic of the internet: its ability to provide real-time feedback information on the participation of others in a political action. The paper tests the hypotheses: that such information makes it possible in large groups to exert the social pressure that Olson (writing in the pre-internet era) considered only viable for smaller groups; that such social pressure will be greatest when the number of other participants are large, making people aware of what sociologists have termed a critical mass of support; and that feedback information about small numbers of other participants will have greatest effect, convincing individuals that their participation will make a difference. The paper uses an experimental design, first with 47 laboratory-based subjects, who were invited to sign petitions and donate money, then with 668 subjects in the field. The participants were randomised into treatment and control groups, who saw the numbers of other people who had signed the petitions, and those who did not. The paper finds a statistically significant difference between these groups. Furthermore, the signing of petitions in the treatment group increased relative to other petitions when the numbers presented were greater than one million. Where the numbers were in the middle range, the treatment group were significantly more likely to donate money to the issue. There was no impact at the lower end of the scale, with numbers less than twelve. The findings lend support to Marwell and Oliver's claims about critical mass.

In *The Logic of Collective Action*, Mancur Olson (1965) put forward a thesis of when individuals can be incentivized to act collectively. He argued that, when organising around collective goods, 'small groups are more efficient and viable than large ones' and that if they are not, they need to be able to coerce their members or provide selective incentives to contributors. Generations of social scientists have worried about the implications of Olson's argument, thinking that it skews the influence of interest groups, limiting the ability of large groups to represent their interests. It would be fair to say that some of the concern has receded about this problem, particularly from more advanced formal work to studies by sociologists that suggest larger groups may actually find it easier to form, as their size makes it more likely they will be able to attain a critical mass of activists who organise around public goods (Marwell and Oliver 1993). Marwell and Oliver argue that the costs of collective action around many public goods vary little with group size, due to jointness of supply; the cost of lobbying for a policy change, for example, is the same regardless of the number of potential contributors. In these cases it is irrelevant to those who contribute how many others are out there, so free-riding is unlikely to be problematic: 'When a social solution to the collective dilemma is required, what matters is the relationship among the possible contributors in the critical mass, not the relationship among everyone in the interest group' (Marwell and Oliver: 1988:60). So larger groups are just as likely to exhibit collective action as smaller ones, and indeed under some conditions more likely, as they are more likely to be able to assemble a critical mass of activists.

However, the general problem of incentivization Olson raises – who contributes and to what effect – remains a core issue within political science. In particular, how do individuals use information about what others are doing as a way of making up their decision about whether to participate or not? Rather than participation being a consequence of resources and psychological orientation, it involves an alignment of incentives between the participants. These considerations do not just happen at small numbers, but occur at the higher end (Marwell et al 1985, Oliver and Marwell 1988). Although Marwell and Oliver's argument is persuasive in terms of justifying how

large groups form (contrary to Olson's predictions), it is not clear how individuals would calculate the likelihood of a group reaching critical mass or how their incentives would be affected by their perception of such a likelihood, nor do they attempt to put a number on the concept.

One approach is to suggest that the structure of incentives is set for all time, at least in an industrialised and mobile society, where there are large latent groups, and where not all interests are mobilised. But there is another line of argument that suggests that changes in technology affect the logic of participation, partly because they reduce the costs of participating and partly because they alter the information that individuals receive about each other. Many writers have speculated on how widespread use of the internet could affect Olson's thesis and offered refinements to some of his claims (e.g. Bimber 2005). In particular, Lupia and Sin (2003) argue that evolving technologies - particularly the internet - affect opportunities and incentives that are relevant to collective action, advantaging some collective endeavours and endangering others (Lupia and Sin, 2003: 318).

It is with the capacity of the internet to change the information environment within which potential participators operate and thereby change the incentives for potential collaborators that this paper is concerned. The first experiment reported in this paper seeks to test how this aspect of the internet in particular may alter the provision of collective goods. Subjects were asked to participate in a laboratory experiment in two ways; first, to sign an e-petition (an area of citizen involvement which has expanded in recent years); and second to donate a small proportion of their turn-up fee to the cause of the petition. The experiment investigated whether (a) seeing the numbers of other participants (as opposed to not seeing them) influence the willingness to sign and contribute and (b) how the actual number of other people signing influences willingness to contribute and the direction of the influence. The paper reviews the literature on collective action and the internet, then sets out the methods, reports the results and then summarises the implications for research. The second experiment examines the same relationships for the field for 668 respondents allocated to a control group and three treatment groups.

Collective action and the internet

Olson discusses collective action and group size by dividing groups into three types. First, in a small privileged group, each member, or at least one of them, has an incentive to see the collective good is provided, even if he has to bear the whole burden of providing it himself. Second, in an intermediate group no single member gets a share of the benefit sufficient to give him an incentive to provide the good himself, but the group does not have so many members that no one member will notice whether any member is or is not helping to provide the collective good. Third, in a large latent group if one member does or does not help provide the collective good, no other member will be significantly affected and therefore none has any reason to act. Thus an individual in a latent group cannot make a noticeable contribution to any group effort, and since no one in the group will react if he makes no contribution, he has no incentive to contribute. So only a separate and selective incentive will stimulate a rational individual in a latent group to act in a group-oriented way. In passing, we note it is difficult to discern from Olson when he means an individual's behaviour will be noticeable to others and when an individual feels that it will be noticeable themselves. Lupia and Sin place emphasis on the concept of noticeability, but they also fail to make this distinction.

Olson discusses the effect of social pressure to incentivize group members to participate, but discards it for larger groups; 'In general social pressure and social incentives operate only in groups of smaller size, in groups so small that the members can have face-to-face contact with one another' (62). But Lupia and Sin point to a footnote: 'If the members of a latent group are somehow continuously bombarded with propaganda about the worthiness of the attempt to satisfy the common interest in question, they may perhaps in time develop social pressures not entirely unlike those that can be generated in a face-to face group, and these social pressures may help the latent group to obtain the collective good. A group cannot finance such propaganda unless it is already organized and it may not be able to organize until it has already been subjected to the propaganda; so this form

of social pressure is probably not ordinarily sufficient by itself to enable a group to achieve its collective goals. Lupia and Sin point out that communication technologies, such as the internet, could revise the ability of large groups to apply such social pressure.

There have been few attempts to provide empirical evidence to substantiate these claims. There are a number of excellent reviews of the possibilities for the internet to facilitate collaboration and reduce collective action problems, notably Lev-On and Hardin (2007), Bimber (2003) and Lupia and Sin (2003), but they are almost wholly qualitative. In particular, although experiments have been widely used in economics to investigate collective action and in political science to suggest how individuals behave in collective choice situations (for example, Dawes, 1986) and how to design institutional rules to maximise co-operation in commons-based decision making (Ostrom, 1997), there have been few experiments to simulate the type of environments in which individuals decide whether to contribute participatory costs to supporting mobilisation around public goods. Gerber, Green and Larimer (2008) used a large-scale field experiment to investigate the effect of social pressure on voter turnout, but in this case social pressure was applied through the effect of voters feeling that their own lack of participation would be observable to their household or neighbours, rather than being influenced by information about what their household, neighbours or wider community were doing themselves. In particular, there have been very few experiments exploring what effect the internet might have on such an environment.

Purpose

The purpose of this experiment is to test empirically how certain aspects of the internet affect collective action decisions. Specifically, we want to examine the effect of the capability of internet-based applications to provide users with real-time information about other people's preferences. Does such information result in the type of social pressure referred to by Olson? And is such social pressure

maximised when numbers are small (so that an individual feels their action to be more noticeable) or large (so that an individual feels more bombarded with social pressure and other social incentives?)

Hypothesis

Our hypothesis is that information about the preferences of others will affect people's decision whether to incur costs in the pursuit of collective action. That is, if people know (for example) how many people have signed a petition, we hypothesise that it will affect their willingness to sign or to incur other costs in the pursuit of the issue that is being petitioned for. There are two competing hypotheses:

- First, that large number of other petitioners will encourage individuals to incur costs and sign up. Evidence of others' behaviour will provide the 'social pressure' referred to by Olson and the likelihood of 'critical mass' predicted by Marwell and Oliver.
- Second, that small number of petitioners will encourage individuals to incur costs, because they perceive that their contribution is more likely to make a difference. As well as reducing organizational costs of mobilization (something we follow Lupia in taking as a given) and reducing the costs of participation for individuals, the actions of any one or more members in a group are more noticeable in Olson's terms, either to any other individuals to a group or to the potential participant themselves.

Experimental Design

The experiments tested these hypotheses by exploring the effect of information on the mobilisation of others on any one individual subject's willingness to incur costs in supporting a collective issue. In the first lab-based experiment, around forty people were invited to participate from OxLab's pool of subjects (which includes both students and non-students from the city of Oxford). Both groups were provided with a list of six petitions currently active and asked first, whether they agreed with the

issues being petitioned for; second, to spend ten minutes finding out about the issue on whatever web sites they chose; and third, whether they (a) would sign the petition on the issue (or against the petition if they wouldn't) and (b) whether they would give a small proportion of their participation fee towards supporting the issue. They were divided into two groups: one (the treatment group) received information about how many people had signed the petition (some of the petitions had high numbers of signatures, some low) and the other (the control group) received no such information. The No.10 Downing street web site was blocked during the experiment to prevent those in the second treatment finding this information. Subjects completed a post-experiment questionnaire asking for some demographic information and attitudes, perceptions of the experiment and levels of internet skills. Subjects were incentivized to participate by a payment of between £12 and £15, depending upon the amount they chose to donate to supporting the various issues with which they were presented. All subject information was fully anonymised and no addresses were collected.

Participants were asked to consider six petitions. These addressed the following issues (the number of signatories provided to the treatment group are shown in brackets):

1. To introduce a tax on plastic carrier bags (665,768)
2. To exert pressure on the Japanese government to halt its programme of whaling (9)
3. To create a new public holiday, the National Day of Remembrance (369,492)
4. To provide free prescriptions for asthma sufferers, unrelated to income (11)
5. To employ a policy of an opt out system instead of the current opt in system for organ donation (1,234,117)
6. To scrap the introduction of compulsory identity cards (6)

Deception was avoided in the experiment by presenting subjects with actual petitions and numbers. Subjects did not actually sign the petitions in the experiment, but when they had completed the experiment including the post-experiment questionnaire, they were provided with the screen which gave the opportunity to do so.

In the larger quasi field experiment, we tested more fully this hypothesis, using a larger subject pool and four treatments. We used 668 subjects, contacted from OxLab's subject database who participated in the experiment remotely, using their own internet connection. They were presented with a screen which asked them to examine a number of issues and then asked to (a) express their willingness to sign a petition supporting the issue and (b) donate a small amount of their participation fee to supporting the issue. Subjects were randomly allocated across a control group (of 173) and a treatment group (of 495). In the control group, participants received no information about other people signing. In the treatment group, subjects were randomly assigned across three sub-treatment groups in each of which participants received six petitions, two in each of the following categories:

- Subjects were told that very large numbers of people (> 1 million) had signed the petition
- Subjects were told that medium numbers of people (>100, < 1 million) had signed
- Subjects were told that very low numbers of people (< 100) had signed

The sub-treatment groups were as follows:

Group B (164) received two 'low-numbered' petitions, two 'high' and two 'middle'

Group C (171) received two 'middle-numbered' petitions, two 'low' and two 'high'

Group D (160) received two 'high-numbered' petitions, two 'middle' and two 'low'

Subjects were incentivized via a small payment (£6-£8), again depending on the amount they chose to donate, which was paid using Amazon vouchers, which were automatically generated when the subject had satisfactorily completed the task. There was a pre-experiment questionnaire as before. All subject information was fully anonymised and no addresses were collected. The petitions used were as follows (with the high, medium and low numbers provided shown in brackets):

1. *National governments should put pressure on the Chinese leadership to show restraint and respect for human rights in response to protests in Tibet*

(High: 1,682,242, Medium: 1,189, Low: 76).

2. *National governments should negotiate and adopt a treaty to ban the use of cluster bombs*

(High: 1,200,000, Medium: 330,000, Low: 7)

3. *Governments should lobby the Japanese government to stop commercial whaling of the Humpback whale*

(High: 1,082,808, Medium: 57,299, Low: 98)

4. *Governments should support a stronger multinational force to protect the people of the Darfur region of Sudan*

(High: 1,000,000, Medium: 5,978, Low: 15)

5. *World leaders should negotiate a global deal on climate change*

(High: 2,600,000, Medium: 575,000, Low: 53)

6. *Governments should work to negotiate new trade rules – fair rules to make a real difference in the fight against poverty*

(High: 17,800,000; Medium: 22,777, Low, 25).

There was no deception in this experiment. Subjects were provided with generic petitions and we trawled the WWW to find actual on-line petitions that had been created on these issues with different numbers of signatories, so the number of signatories provided were in all cases actual numbers that had signed a similar petition on this issue. The issues were all selected to be of international significance and petitions used were all drawn from across different geographical spaces and points in time, although all during the last three years.

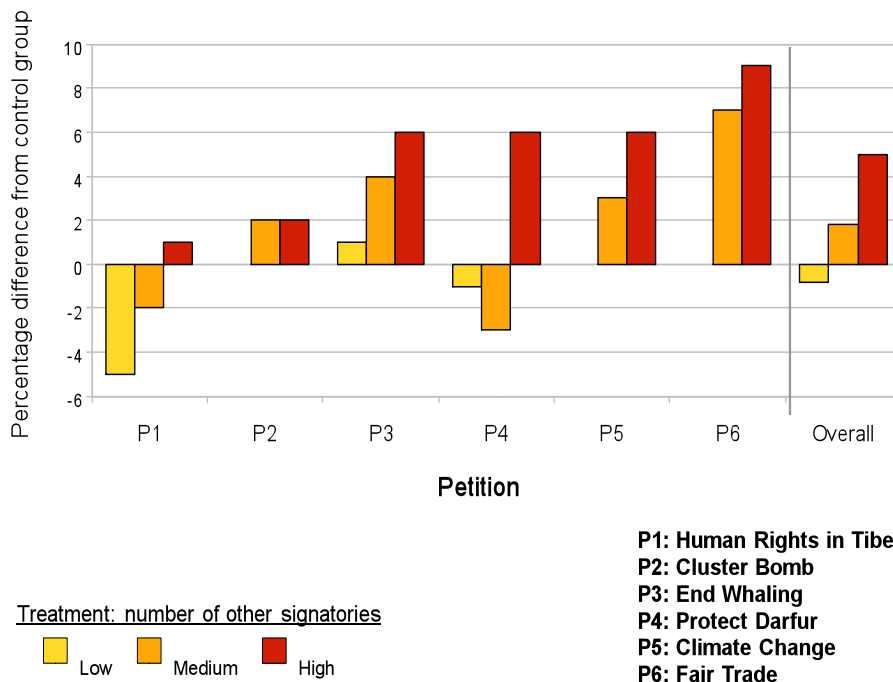
Experimental Results

As there were six petitions in both laboratory and field, we stacked the data so as to examine the variation according to the numbers that subjects could see signing, which yielded a total of 282 person-petitions for the laboratory and 4008 for the field. In the initial lab-based experiment, we found that 58 per cent of petitions were signed overall; 46 per cent in the control group and 54 per cent of the treatment group (those who received information about other people signing). We

identified one issue (out of six) where subjects were significantly more likely to sign a petition if they received information that many other people had signed than if they received no information. This petition was the one supporting an opt out system for kidney donation, the only one for which the number of signatures was over a million (1,234,117), leading to a possible hypothesis that the critical mass where the information makes a difference could be one million. Across the six petitions there was a positive correlation with the number of other people signing (when numbers were high) and the likelihood of an individual signing. The numbers of subjects were too small to come to firm conclusions about the distribution of effects on people's likelihood to participate. But the identification of a distinct effect for high numbers on propensity to sign and a weaker effect of medium numbers on propensity to donate (see below) fed into the design of the larger quasi-field experiment.

For the larger experiment, 62.5 per cent of the petitions presented to the control group were signed. Of the petitions presented with low numbers, slightly less (-1.9 per cent) were signed and for those presented with medium numbers, slightly more (+1.9 per cent) were signed. For those presented with high numbers, 66.7 per cent were signed (that is, 4.2% more than in the control group) and this result is significant ($p=0.015$). The percentage of participants signing each petition are shown in Figure 1 below, compared with the proportion of people signing in the control group (shown as the base line). The figure shows clearly that for all petitions, 'high' numbers had an effect, although it was not always significant. This effect was strongest for the petition on fair trade, which also had by far the highest number of signatories in this category (17.8 million), leading to a possible hypothesis that the effect of high numbers varied according to the magnitude of the number of other signatures. But when we tested this hypothesis by using the log of the number of signatures in a regression, we found no statistical significance.

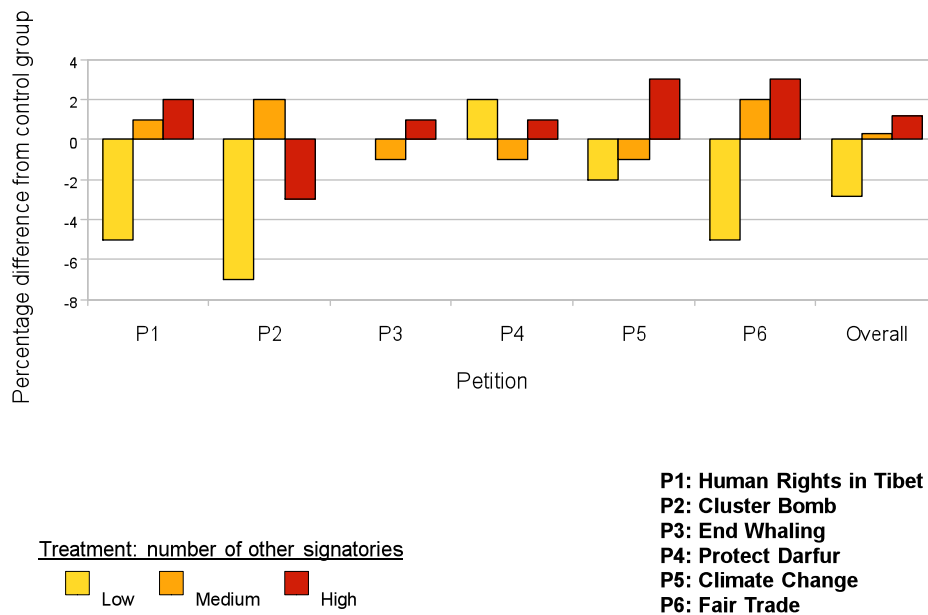
Figure 1. Subjects Signing Petitions (by number of other signatories)



Turning to people’s propensity to donate, overall, two-thirds of those who signed a petition went on to make a donation. Interestingly, an as yet unexplained feature of the patterns of donation is that for every petition in the larger experiment, almost exactly two-thirds of those who signed went on to donate, suggesting some kind of universal effect. Even with the rather different experimental set-up and much smaller numbers in the laboratory experiment, a similar effect could be observed.

Across the six petitions, a similar graph to Figure 1 above for signing is shown in Figure 2 for donations. Here the effect of the numbers is less clear, but low numbers have a negative effect in all but one case (the petition on Darfur) and high numbers have a small positive effect in all but one (the petition on cluster bombs). The difference between signing and donations is interesting, possibly due to the fact that less people donate than sign (63 per cent versus 43 per cent). It seems that this group have a higher threshold for donating and are consequently less influenced by high numbers and more easily discouraged from doing so by low numbers of other signatories.

Figure 2. Subjects Donating to Petitions (by number of other signatories)



Looking at the results across the two experiments for signing, we ran probit regressions for both experiments with ‘signing’ as the dependent variable and using our ‘high’, ‘medium’, ‘low’ terms as independent variables, shown in Table 1 below. Clearly, we would expect the likelihood of an individual signing to also be affected by the extent to which they agreed with the issue under consideration. So we also used a variable based on responses to the pre-experiment questionnaire, where subjects were asked whether they agreed or disagreed with the issue of the petition, which we label ‘agree for issue’. As Table 1 shows, for the laboratory experiment, the treatment variable had overall significance at the 0.1 level (in M1), although it could be argued that such a finding is immaterial, as knowing the numbers of other signatories has been hypothesised to both increase and decrease participation depending on the numbers. So we were more interested in the effect of the ‘high numbers’ treatment (shown in M2), which was significant at $p < 0.05$ (a two tailed test), a probability of 0.098, while ‘agree for issue’ is significant at the .05 level. For the quasi-field experiment, we also found significance for the ‘high numbers’ treatment, at the $p < 0.01$ level and for

the ‘agree with issue’ variable at $p < 0.001$. We found no significance for ‘low’ or ‘middle’ numbers across the two experiments.

Table 1. Probit Models for Signing Petitions

	Laboratory			Field Experiment		
	M1	M2	M3	M4	M5	M6
	β (s.e.)	β (s.e.)	β (s.e.)	β (s.e.)	β (s.e.)	β (s.e.)
Agree with Issue	0.88 (0.21)***	0.68 (0.19)***	0.82 (0.19)***	1.11 (0.08)***	1.12 (0.08)***	1.10
	(0.08)***					
Signatures						
<i>High Numbers</i>	0.89 (0.35)**			0.15 (0.06)*		
<i>Middle Numbers</i>		0.0 (0.22)			0.05 (0.06)	
<i>Low Numbers</i>			0.16 (0.20)			-0.03 (0.06)
Constant	-0.35 (0.17)*	-.23 (0.16)	-0.31 (0.16)*	-0.59 (0.08)***	-0.60 (0.08)***	0.58
	(0.08)***					
Number of Obs	161	183	207	1973	1970	1969
Log Likelihood	-95.57	-118.53	-127.6	-1166.9	-1186.5	-1205.7

†: $p < 0.1$, *: $p < 0.05$, **: $p < 0.01$, ***: $p < 0.001$

We did not look for any overall treatment effect, as knowing the numbers of other signatories has been hypothesised to both increase and decrease participation depending on the numbers and these effects could cancel each other out. So we were more interested in the effect of the ‘high numbers’ treatment (shown in M1 and M4), which was significant at $p < 0.05$ (a two tailed test) across both experiments. We found no significance for ‘middle’ (M2, M5) or ‘low’ (M3, M6) numbers across the

two experiments. For donation, shown in Table 2, in contrast we did not find the ‘high numbers’ treatment to have any effect.

Table 2. Probit Models for Donating to Petitions

	Laboratory			Field Experiment		
	M1	M2	M3	M3	M4	M5
	β (s.e.)	β (s.e.)		β (s.e.)	β (s.e.)	
Agree with Issue	0.55 (0.22)*	0.50 (0.21)*	0.60 (0.21)**	0.95 (0.09)***	1.05 (0.1)***	1.02(0.1)***
Signatures						
<i>High Numbers</i>	0.24 (0.29)			0.04 (0.06)		
<i>Middle Numbers</i>		-0.54 (0.26)*			0.01 (0.06)	
<i>Low Numbers</i>			-0.22 (0.20)			-0.09 (0.06)
Constant	-0.86 (0.19) ***	-0.82 (0.18)***	-0.89 (0.18)***	-1.04 (0.09)***	-1.14 (0.1)***	-1.1 (0.1)***
Number of Obs	161	183	207	1973	1970	1969
Log Likelihood	-96.68	-99.35	-118.24	-1282.1	-1267.5	-1258.3

†: p<0.1, *: p<0.05, **: p<0.01, ***: p<0.001

For the laboratory experiment, the ‘middle numbers’ treatment had a modest negative significance at the p<0.1 level, meaning that participants were less likely to sign when provided with the information that more than a hundred but less than one million other people had signed (actually, given the actual numbers used, middle numbers ranged from 300,000 to 600,000). In the quasi-field experiment, we found a similar effect for the ‘low-numbers’ treatment, that is that participants were less likely to sign when they saw that < 100 other people had signed, in comparison with no information, but ‘middle’ numbers were not significant.

Discussion

Nevertheless, the results are promising, showing the impact of information as opposed to just seeing the petitions. The features of the internet that allow for interaction, associated with Web 2.0 technologies, which allow respondents to see other respondents in real time, could well have an effect on political participation. We believe that the results show the size of the numbers matter, much as Olson, and Marwell and Oliver reasoned, with middle numbers depressing participation but with high numbers increasing it. But we need to know that what we observe is the effect is the effect of the numbers on the same petition rather than on different petitions we observe here. Our results could be that people sign more just from knowing the numbers of a certain kind of petition rather than the numbers on their own.

Conclusion

The findings of these experiments should be helpful in providing a methodological pointer for future study of the societal implications of the internet. While internet research abounds with claims of how the internet enhances political participation, empirical evidence is scarce. Experiments of this kind could prove to be a fruitful way to establish specific internet effects, as they have in the field of public administration where members of the same research team have investigated how the changed information environment provided by the internet affects citizen-government interactions (see Escher and Margetts, 2007; Margetts and Escher, 2008; Dunleavy et al, 2007).

The internet is changing the information environment of citizens who use the internet (around three quarters of the UK population), as recommender systems, reputation systems and a whole host of applications labeled 'web 2.0 technologies', based on user generated content, become widespread. Although such technologies are as yet far more common in the commercial domain, there is little doubt that the political world will follow, given the suitability of the internet as a site for political activity. In the US, there is a portent for future elections in the UK, as sites such as YouTube,

<http://moveon.org> and the on-line fundraising activities of some candidates (notably Barak Obama) are clearly having a significant effect on current electoral campaigns by incorporating small-scale activities undertaken by many millions of individuals, with the readily available information about these activities (such as video clips viewed, activities undertaken, donations made) having a potentially cumulative effect. The No. 10 Downing Street site investigated in this experiment is a small but significant step in this direction. It is important therefore, to develop methodologies to analyze the effect of such technologies on people's willingness to take part in political activity. This experiment, it is hoped, takes a small step towards building the tools necessary to explore the effect of one particular dimension of this increasing automation of political activity; the ability to provide real-time information about the participation of others.

References

- Bimber, B. (2005), 'Reconceptualizing collective action in the contemporary media environment', *Communication Theory*, 15: 365-388.
- Dawes, R., Orbell, J., Simmons, R., and Van De Kragt, A. "Organizing Groups for Collective Action," *American Political Science Review* (80:4), 1986, pp. 1171-1185.
- Dunleavy, P. Margetts, H. Bastow, S. Pearce, O. and Tinkler, J. (2007) *Government on the internet: progress in delivering information and services online*, Value for Money Study by the UK National Audit Office (London: The Stationary Office) HC 529 13 July.
- Escher, T., Margetts, H., Petricek, V. & Cox, I. (2006) 'Governing from the centre? Comparing the nodality of digital governments' Presented at the 2006 Annual Meeting of the American Political Science Association, 31 Aug-4 Sept.
- Escher, T. And Margetts, H. (2007), 'Understanding Governments and Citizens On-Line: Learning from E-Commerce', Paper presented to the Annual Conference of the American Political Science Association, Chicago, 31st August 2007
- Gerber, A. Green, D. And Larimer, C. (2008) 'Social Pressure and Voter Turnout: Evidence from a Large-Scale Field Experiment', *American Political Science Review*, Vol. 102, No. 1 February.
- Lupia, A. and Sin, G. (2003), 'Which public goods are endangered?: How evolving communication technologies affect the logic of collective action', *Public Choice*, 117: 315-331.ab
- Oliver, P. Marwell, G. Teixeira, R. (1985), 'A theory of the critical mass. I. interdependence, group heterogeneity, and the production of collective action', *The American Journal of Sociology*, Vol. 91, No. 3. (Nov., 1985), pp. 522-556.
- Oliver, P. and G. Marwell (1988), 'The paradox of group size in collective action: A theory of the critical mass. II.', *American Sociological Review*, 53: 1-8.
- Marwell, G. and Oliver, P. (1993), *The Critical Mass in Collective Action* Cambridge: Cambridge University Press.

Olson, M. (1965), *The Logic of Collective Action* Cambridge: Harvard University Press.

Orbell, J. and Dawes, R. "A 'Cognitive Miser' Theory of Cooperators' Advantage," *American Political Science Review* (85:2), 1991, pp. 515-528.

Ostrom, E., Gardner, R., and Walker, J. (eds.). *Rules, Games and Common Pool Resources*. Ann-Arbor, MI: University of Michigan Press, 1994.

Ostrom, E., Dietz, T., Dolsak, N., Stern P., Stonich, S., and Weber, E. (eds. 2002). *The Drama of the Commons*, Washington, DC: National Academy Press, 2002.

Appendix 1: Petitions and Numbers provided

Petition 1: Tibet

Statement: National governments should put pressure on the Chinese leadership to show restraint and respect for human rights in response to protests in Tibet.

Petition: We the undersigned call on the government to call an urgent meeting of the United Nations Security Council to discuss the current situation in Tibet and we petition Chinese President Hu Jintao to show restraint and respect for human rights in your response to the protests in Tibet, and to address the concerns of all Tibetans by opening meaningful dialogue with the Dalai Lama. Only dialogue and reform will bring lasting stability. China's brightest future, and its most positive relationship with the world, lies in harmonious development, dialogue and respect.

High: 1,682,242 [Avaaz, live]

Medium: 1,189 [my-cause-com]

Low: 76 [Downing Street, live].

Petition 2: Ban Cluster Bombs

Statement: National governments should negotiate and adopt a treaty to ban the use of cluster bombs.

Petition: Cluster munitions have no place in a civilised world. We the undersigned petition all governments meeting in Oslo in December 2008 to negotiate and adopt a treaty to ban cluster bombs with no exceptions, no delays and no loopholes, and provide all necessary assistance to affected communities and victims.

Medium: 330,000 at handicap international - http://www.handicap-international.org.uk/page_249.php, also open

Low: 7 signatures [Downing Street, open]

High: 1,200,000 signed petitions against landmines, for the International Campaign to Ban Landmines, organised by Handicap International, see <http://www.stopclustermunitions.org/> [For cluster bombs, Can't find, why -I think there is now something called the Cluster Munitions Coalition which has run petitions in the past which have been very successful but there is a problem with its web site - at <http://www.stopclustermunitions.org/>] But cluster bombs are the new landmines - so we can conflate the two

Petition 3: End to whaling

Statement: Governments should lobby the Japanese government to stop commercial whaling of the Humpback whale.

Petition: We the undersigned wish to show our support for an end to whaling, adding our voices to the global campaign to protect these precious mammals from extinction. We ask world leaders to force Japan to withdraw from its decision to reintroduce commercial whaling of the Humpback whale.

Low: 289 but use 98 [Downing St live, put lower number because was lower??]

Medium: 57,299 [Tell Japanese Ambassador Ryozo Kato to immediately stop the senseless annual killing of whales, including the endangered Humpback. care2petitionsite, live]

High: 1,082,808 [live at www.whalesrevenge.com] and lets send them here for signing

Petition 4: Protect the people of Darfur

Governments should support a stronger multinational force to protect the people of the Darfur region of Sudan.

We the undersigned petition the government to support a stronger multinational force to protect the people of Darfur and to seriously press for the establishment of a functioning ceasefire

Low: 15 signatures [Downing Street, live, so check number].

Medium: 5,978 signatures [We endorse the Act to End Genocide in Darfur Sudan', petition to United Nations, White House at www.petitiononline.com]

High: 1 million signatures [The Save Darfur Coalition launched the "Million Voices for Darfur" campaign on January 22, 2006, the 55th anniversary of the ratification of the U.N.'s Convention on Genocide seeking to deliver one million hand-written and electronic postcards from Americans to President Bush demanding that he support a stronger multinational force to protect the people of Darfur www.savedarfur.org]

Petition 5: Climate Change

Statement: World leaders should negotiate a global deal on climate change.

Petition: We the undersigned petition world leaders to pull together an effective and fair global deal on climate change.

Low: 53 signatures [Downing St, Live, We the undersigned petition the Prime Minister to Make "Climate Change, Global Warming and Saving the Planet" Our Top Priority].

Medium: 575,000 In week of 20th June, Oxfam and other global poverty groups met with Japanese Prime Minister Yasuo Fukuda to hand over a global 575K petition calling on world leaders to take strong action against climate change.]

High: 2.6 million [petition to Hilary Benn, Sec of State for Environment Food and Rural Affairs, 22 April 2007

Replacement Petition 6: Fair trade

Statement: Governments should work to negotiate new trade rules – fair rules to make a real and positive difference in the fight against poverty.

Petition: We the undersigned press decision-makers and governments to negotiate for new trade rules – fair rules to make a real and positive difference in the fight against poverty – and to operate according to the principles of ‘fair trade’.

High: Big Noise petition convened by Oxfam’s Make Trade Fair campaign was signed by 17.8 million people in 2005. To sign the petition follow this link:

<http://www.maketradefair.com/en/index.htm>

Medium: 22,777 signatures for a US version of the Big Noise at

<http://www.thepetitionsite.com/takeaction/619386565?z00m=67973&z00m=67973&l=1137163241>

Low: 25 signatures, Downing St petition about letting fair trade goods pay no VAT, live, but only until July 29th.