Technical capital and participatory inequality in eDeliberation: An actor-network analysis

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Abstract

This paper examines how participatory inequalities are (re)produced in eDeliberation, a practice that purposely fosters open, fair, and rational discussions among citizens over the Internet. Relying on the theoretical traditions of Bourdieu's capital and the Actor-Network Theory, this paper proposes that technical capital, along with social, economic, cultural, and symbolic capital, function in eDeliberation as inequality makers. Two cases of eDeliberation practices conducted in the United States serve as the sources of data. Both statistical analyses of close-ended questions and a qualitative content analysis of open-ended questions from surveys were used to generate the empirical findings. Technical capital is found to reproduce existing inequalities through the unequal accumulation rates and the unbalanced convertibility associated with different actors. Both theoretical and practical implications of the findings are suggested.

Key words: eDeliberation, inequality, technical capital, actor-network

Introduction

Inequality is the key concern in both political theory and practice. The research of participatory inequalities in political activities has documented well the unequal patterns of participation associated with class, gender, race, and age. The emergence of new information and communication technologies (ICTs), especially the Internet, seems to bring hope to ending the inequality in offline political participation. Scholars have observed that digital media encourage minorities to engage in politics (e.g., Stromer-Galley 2002; Zhang 2006). However, the theory of digital divide alerts us to the inequality in online political participation when the unequal ownership of new technologies is evident. Recent studies on the digital divide go beyond uneven access and into inequalities among persons with formal Internet access by utilizing the concept of 'digital inequality' (DiMaggio & Hargittai 2001). As political practices (e.g., eDeliberation, eGovernment, eConsultation, etc) that put online technology at the center, digital democracy is exposed to both the benefits of digital empowerment and the threats of digital inequality.

This paper aims at integrating two theoretical traditions – one is Bourdieu's concept of capital (Bourdieu 1986) and the other is the Actor-Network Theory (ANT) (Latour 2005) – in order to explore the relationship between technologies and political inequality in the context of online deliberation (Price & Cappella 2008).Two cases of eDeliberation projects from the United States are scrutinized to answer the following questions: whether the existing inequalities are reproduced in eDeliberation and how the inequalities are made by technologies.

The paper starts with a review of Bourdieu's social theory by centering on the concept of capital and its features of accumulation and convertibility. Technical capital is proposed by taking the approach ANT suggests. How technical capital, theoretically, makes political inequality into being is discussed. The paper then provides an overview regarding the sub-field

of eDeliberation, a space in which the capitals become functional. A detailed description of the two cases of eDeliberation practices are given before outlining the data and the analytical strategies this paper utilizes. The results show that some of the existing inequalities are observed in participating in eDeliberation. Actors involved in this sub-field are unequal due to their uneven relations with technologies. The network that eDeliberation mobilizes has to exist in the constant struggles among actors. Answers to the research questions are summarized, and the implications of technical capital in analyzing social inequality are discussed in the last section.

Political inequality and technical capital

Political inequality can be gauged by the unequal degree to which citizens get engaged in the political process, the unequal treatment citizens receive when involved, and the unequal influence citizens have over political decisions. This paper mainly focuses on the first type of inequality, the unequal participation in the political process in the United States. The inequality among Americans in terms of political participation is well-documented. Persistent differences regarding gender, age, race, income, and education have been found in a large range of political activities, from the most common such as voting to the least common such as running for office. In particular, the SES (i.e., Socioeconomic Status)-disadvantaged groups are often underrepresented among the politically active and overrepresented among the politically inactive (See Burns *et al*. 2001 for females; see Leighley 2001 for racial minorities; see Nie *et al*.1996 for people with low education; see Scholzman 2006 for people with low income; see Zukin *et al*. 2006 for younger people). While these SES features mark one's position in the social hierarchy, the mechanisms through which the different positions translate to participatory inequality in politics need to be further explicated.

Bourdieu's capital is a concept that is potent in manifesting the dynamics of inequality-making. SES groups are 'to be made' (Bourdieu 1989, p. 18) rather than being given in social reality. Capitals, as forms of accumulation and convertibility, perform themselves through discriminating agents who occupy different social positions within fields (see editorial for a detailed discussion). The functioning capitals within one particular field can be defined in terms of accumulation and convertibility. Being accumulative means that first, it takes time to accumulate and second, when it is accumulated, it tends to persist in its being. Convertibility refers to the ability of being transformed from and to other forms of capital, based on their equivalence in 'labor-time' (Bourdieu 1986, p. 54), as well as from one field to another field. Following this logic, Putnam (2000) tries to explain how social capital functions in the American community. The decreased volume of social capital was manifested in the reduced number of connections among individuals through associations, church, clubs, and other organizations. The combination of different types of social capital also shifted – community ties were weakened, whereas anonymous membership of large-scale groups seemed to burgeon. The distribution of social connections was re-structured, corresponding to the changes that occurred in other fields such as the field of economy (e.g., two-career couples) and the field of mass media (e.g., electronic entertainment).

Bourdieu's conceptualization directs our attention away from treating SES groups as fixed entities and towards how capital acts as 'the set of actually usable resources and powers' (Bourdieu 1984, p.122) that have to function in fields. In the field of politics, the functioning capitals not only include social capital, but also embrace other forms such as economic, cultural and symbolic capital. Economic capital 'is immediately and directly convertible into money and may be institutionalized in the form of property rights' (Bourdieu 1986, p. 47); cultural capital

'is convertible, on certain conditions, into economic capital and may be institutionalized in the form of educational qualifications' (Bourdieu 1986, p. 47). Symbolic capital, in contrast, 'is nothing other than economic or cultural capital when it is known and recognized' (Bourdieu 1989, p. 21). This paper argues that as ICTs become fully incorporated into the field of politics, technical capital should be added into our explanatory framework as well.

Technical capital, in this paper, is defined as a 'structural relation'[i] between technologies and other actors. The relations are structural because they exist 'independent of the consciousness and will of agents' and are constitutive of what Bourdieu calls 'fields', which are capable of constraining agents' practices or representations (Bourdieu 1989, p. 14). In other words, whether human or institutional agents recognize the relations or not, the relations nevertheless guide and constrain the actors who are included in the field. This definition differs from the view of treating technologies as supportive instruments that can be used in social interactions. For example, Resnick (2004) proposes the term sociotechnical capital 'to refer to productive resources that inhere in patterns of social relations that are maintained with the support of ICTs.' In contrast, the current definition suggests that technologies, along with financial resources, educational credentials, interpersonal connections, and symbolic reputation, can define actors through the structural relations between them.

The emphasis on the relational view of technical capital reckons ANT and its insistence on technologies as actors. When Bourdieu urges for 'the relational mode of thinking' (1989, p.15), ANT calls for a 'relativist solution' to the puzzle of the social (Latour 2005, p. 12). Society is considered as a 'heterogeneous network' (Law 1992, p. 379) in which actors and relationships between them become the foci. The network in ANT is not a social network of human agents, but a network of heterogeneous actors that are at the same time social, technical,

and more[ii]. Here, the heterogeneity of actors refers to an unlimited array of materials including individuals, groups, organizations, institutions, physical objects, biological species, and so on. Technologies are considered as actors and technical capital refers to the relation with technologies, which constructs the social order along with other relations (e.g., relations with money, educational institutions, etc.).

Technical capital, as with other forms of capital, has to function within fields. Fields can be understood as either fractions of an overarching network (i.e., the society) or smaller-scale frameworks that are semi-autonomous. If Bourdieu's fields operate as configurations of functioning capitals (Webb *et al*. 2002, p. xii), technical capital entails the potential of reproduction or innovation through the structural relations that are allowed to emerge, sustain and convert within the fields. Accumulation of technical capital is understood as the establishment and maintenance of the relations with technologies. Some relations are less durable than others – for instance, thoughts that are written on one piece of paper are less durable than thoughts that are saved in a Microsoft Word file. Convertibility of technical capital is reflected in the relations between technologies and other actors such as financial resources.

By classifying technical capital in the format of structural relations with technologies, we are able to see political inequality as an effect of the network at one historical moment. In political practices that are innovative in deploying ICTs, the construction of inequality should not be presumed as natural products of existing relations of domination such as class, race, and gender. In other words, domination should not be considered as a cause of the political inequalities found in new techno-political practices, but as an effect of the network. The path leading to inequality in new techno-political practices has to be traced by carefully identifying actors (technologies, people, rules and laws, etc.) that are associated and the nature of their

associations. The making of political inequality is through the 'asymmetry' (Latour 1991, p. 117) of the relations between actors, in the stage of both beginning a network and stabilizing it. Although a connection between two actors seems to be mutual, the influence that one actor can enforce on the linked others is not symmetrical – some actors have more power than the others depending upon the size of the network they can command. When the asymmetrical relations become unchallenged or even preferred by the actors, the network has produced and reproduced the inequalities.

To put all the above theoretical contemplations in a nutshell, Bourdieu's social theory is consistent with ANT in its shared concern about relations, structural relations that involve both human and non-human actors. Bourdieu's focus on the accumulation and convertibility of capitals and the configuration of different capitals in the field brings our attention to political inequalities that result from unequal distributions of capitals. ANT further expands our definition of capitals because technologies are considered as actors that constitute the network along with human, institutional, and other actors. Both theoretical traditions converge at the point of seeing society as relational. Political inequalities are made into being through the emergence, development, and stabilization of such relations. All capitals have to function in fields. All relations have to be examined within the network. The next section focuses on how eDeliberation as a sub-field sets its principles and logic.

The sub-field of eDeliberation

eDeliberation, or online deliberation, refers to an emerging body of practices that purposely foster open, fair, and rational discussions among citizens over the Internet (Zhang 2008). It is considered as a sub-field because its logic is subordinated to a higher-level logic of

the field of digital democracy. The field of digital democracy puts special emphases on ICTs, and the emphases have transcended the expectation of technologies as supporting tools and turn ICTs into the promising solution to social, institutional and even ideological problems seen in modern democracies (Hindman 2008). The subfield of eDeliberation follows the two principles of the field of digital democracy: first, eDeliberation is one of the most idealist practices that try to turn the Habermasian public sphere and the model of deliberative democracy into reality; second, eDeliberation uses ICTs, especially the Internet, as the essential component to construct such reality. The Internet, according to Benkler (2006, p. 212-272), is amenable to direct and rational discussions among citizens because citizens are free of the commercial control thanks to the relative independence of the cyberspace from the market. In Bourdieu's words, economic capital is not quite functional in the field.

However, digital democracy as a field actually has to run on various capitals, albeit of the differentiated weights the capitals carry. This point is elaborated within the context of the digital divide or digital inequality research. Internet access, at first, was often considered as a result of the lack of economic capital – if one has enough money, she can afford to buy the access; or if the technology becomes cheap enough, the divide will disappear. Later on, scholars realized that the issue was far more complicated (Mossberger *et al*. 2003; Norris 2001; van Dijk 2005). DiMaggio (2001) points out that what is functional can include social capital as well - one does not have a friend who can troubleshoot for her so she quits the Net. In addition, digital inequalities have different manifestations according to different technologies. Explanations of unequal internet access are not exactly the same as computer ownership. Those of desktop ownership are not exactly the same as laptop ownership. Such variations cannot be understood without referring to the technologies themselves.

In addition, the model of deliberative democracy values rationality to the point that it dismisses any other means to solve conflicts – only better arguments win. Paradoxically, who can make better arguments and what are considered better arguments are both determined by the unequal distribution of capitals (Dahlgren 2009, p. 86-97; Fraser 1992). The technologies used to realize the rational discussions may deepen the existing inequalities. For example, if the discussions are solely based on typing, inequalities in education already produce the inequality in typing speed. However, typing speed is not directly relevant to political decisions until the moment that eDeliberation decides to make typing central to its mechanism of generating quality opinions. That is why technical capital should be treated as one of the specific capitals that operate in the sub-field of eDeliberation.

The cases

The cases are the Electronic Dialogue 2000 project (ED2K) and the Healthcare Dialogue project (HCD), two multi-wave panel projects, with each lasting roughly one year. Different from most Internet-based studies that examine asynchronous message boards or less formal and happenstance "chat" experiences on the Web, both projects here created synchronous, real-time, and moderated group discussions that were designed to specifically produce citizen deliberation. In order to offset the digital divide in the ownership of the Internet and computers, participants were offered free equipment and free connection to the Net, if needed. In order to address the knowledge gap issue, participants were provided background papers and policy debriefs through downloadable files on the project websites. In addition, neither project relied on a convenience sample of Internet users, as is common in most deliberation studies and Web-based studies. Instead, they began with a broadly representative sample of Americans and attempted to recruit

from that sample a set of discussion groups that would be, in their entirety, as representative as possible of U.S. citizens.

The core of both projects consisted of groups of citizens who engaged in a series of real-time electronic discussions about issues facing either the unfolding 2000 presidential campaign or the country's healthcare reform. The discussions lasted for about an hour apiece. Participants registered their available time slots first and then were assigned to discussion groups with sizes ranging from five to twelve. Facilitation/moderation of the discussion groups was standardized across both discussions and groups in two ways. First, all the moderators had gone through two-hour training to learn how to manage the chat room, what to say when certain responses emerge, and which steps of discussions to follow. Second, there was a detailed moderation guide developed for each round of discussion. The guides included information such as questions to be asked, the sequence of asking questions, time planned for one particular question, and rules of moderation (e.g., eliciting opinions from silent members).

Data and analyses

A set of baseline surveys assessed participants' opinions, communication behaviors, political psychology, political activities, and a variety of demographic, personality, and background variables. Subsequent group deliberations generally included pre- and post-discussion surveys. A series of end-of-project surveys were then conducted after the last discussion was finished. The surveys used in this paper are recruitment and baseline surveys, which indicate the inequalities in participation in the projects, and post-discussion surveys, which contain a set of open-ended questions about the reasons of non-participation.

Mean comparisons based on t-tests and cross-tabulations were run between the enrollment variables and the five variables defining the SES groups in order to provide a baseline description of participatory inequality (see Appendix 1 for the measurements). OLS regressions were conducted on the attendance variables. A group of control variables (i.e., controls for free time) were added in the regression models.

Whereas the statistical analysis provides a description of the inequalities, I rely on the answers to the open-ended questions about non-participation to understand how different capitals, especially the technical type, function in the sub-field of eDeliberation with regards to inequality-making. The wording of the non-participation question was "Why weren't you able to participate?" The question was only asked in HCD Discussions 1 through 3, however. Among those 1,491 people who enrolled, but did not attend the discussions, there were 1,044 people who gave us at least one response about why they were not able to participate in a specific discussion. Clearly, there is a limitation to utilize texts written by participants to identify a real network/field. This concern becomes serious when we know that participants themselves are not always aware of the structural relations that govern their activities. In order to address this limitation, I bring in contextual information such as project proposals, working reports, and direct experience to enrich perspectives that are not explicitly written in texts. In other words, texts as well as contextualized interpretations are both included in the analysis.

A qualitative content analysis (Mayring 2000) instead of a quantitative content analysis is used because I am more interested in the differentiation of positions that are equipped with different types of capitals than the number of agents who occupy the positions. In the language of ANT, I am more interested in finding out types of actors and their network rather than counting the size of the different types of actors. Second, not only manifest content, but also

latent content are within the range of my analysis (Kohlbacher 2006). The purpose of this analysis is not only to reduce the written texts into several categories, but also to provide interpretations that are guided by a theory-based category system. Due to the theoretical emphasis of this paper, my qualitative content analysis generally follows what Mayring (2000) described as the procedure for deductive category application. The first step is to identify the object of the analysis, which is the role of technical capital in inequality-making in the sub-field of eDeliberation. The second step is to define the categories of my analysis based on theories. Then, I need to formulate the coding rules of each category based on theories. Both steps will be reported in detail in the results section. After several rounds of revisions of categories, the coding is conducted throughout the whole set of textual data. The final step is to provide interpretation of these results.

Results

Statistical analyses show that demographics such as education, age, income, gender, and race have significant impacts on participation variables. The first set of findings is about enrollment, based on means comparisons (see Table 1.1). Enrollment is an indicator of whether the recruited participants have ever attempted to be part of the online deliberation. The participation patterns in the enrollment stage were generally consistent, with one exception. Specifically, lower education was consistently associated with lower enrollment rate. Age was shown to be positively related to enrollment in ED2K. Income was positively related to HCD enrollment. Females showed a lower enrollment rate in ED2K. The exception is that females had a higher enrollment rate in HCD. This inconsistency may be explained by the topics to be

discussed in the two different projects. Females may have a higher interest in discussing health issues while males are more concerned about the electoral issues.

Table 1.1 about here.

The second set of findings is based on the regressions that predict attendance (see Table 1.2). Attendance is different from enrollment in that potential attendees have had expressed interest in joining in the discussions. But immediate situations such as time and location may render the attendance inconvenient at that time. After controlling for as many variables as possible, three demographics consistently showed significant impacts on the number of discussions that an enrolled participant actually attended. People with lower education attended fewer discussions than did people with higher education. Younger people attended fewer discussions than did older people. Whites were always more likely to attend the discussions than non-Whites.

Table 1.2 about here

The quantitative data basically confirm that inequalities still exist in eDeliberation, in spite of its philosophies of inclusiveness and fairness. However, the data do not tell us how the inequalities are made into being or to which extent technologies play a role in such inequality-making. Relying on Bourdieu's theories and ANT, a category system was established. Table 2 illustrates such a system. The first column lists the key categories under examination. The second column provides a brief description of the categories. The last column presents examples from the open-ended questions to illustrate the categories. A field, according to Bourdieu, can be considered as a space in which different positions exist. A network in ANT refers to the associations among actors. Positions are occupied by agents, and if we agree with ANT that materials can be agents too, positions are occupied by both human and non-human actors. The

first category is, thus, about actors, nodes that are connected in the network. One way to differentiate actors is to look at capitals that are associated with these actors. The second category is, thus, about capitals, including the four types proposed by Bourdieu and the technical capital this paper is interested in. The last category investigates the nature of the network – how large the network is, and what the dynamics of this network are. The asymmetrical relations in the network and the unequal power flow are considered as the sources of inequalities.

Table 2 about here.

Actors. I identify actors in the sub-field of eDeliberation by a simple criterion – whether the network still exists without the presence of this actor. This is consistent with Latour's definition of 'doing things' (1991 p. 241) in that what the actors do is to keep the network existent. We can see that both human actors, including researchers who designed the projects and staff who kept running the projects, and non-human actors, such as the java program that was required to enable the log-in to the chat room, are necessary components in order for the eDeliberation projects to work. If we look at the frequencies of mentioning these actors, our respondents made a much more frequent reference to technical actors than to human actors. Specifically, problems related to technical actors were mentioned 479 times as the most popular reason for non-participation.

To come up with an inventory of actors does not mean that the actors are equally powerful. The most recognized actor, also, is not always the most influential actor. Some actors (e.g., the designers) endeavor to define the roles of other actors. Their effort to define may be achieved, but it has to always deal with resistance and alternative definitions. The more powerful actors achieve their own version of the definition and translate other actors using such definitions

(Callon 1989, p. 24-28). Although never mentioned by participants, funders are an important type of actor that set up the basic definitions for almost all the other actors. When funders approved the project proposals, they already attributed to other actors 'an identity, interests, a role to play, a course of action to follow, and projects to carry out' (Callon 1989, p. 24). For example, researchers have been attributed the identity of designers, whose role is to take full advantage of the technologies to achieve the promised goals of deliberative democracy. Their interests are, thus, dependent on the success of such design, measured by reaching some ideal principles (e.g., reasonableness of opinions). The actions they follow have to maximize the potential of technologies and minimize the adverse influence of the existing power relationships. One such action was to provide free devices (i.e., WebTV) in order to act against the problem of the digital divide. Another action was to draft reading materials (e.g., the policy debriefs) that contain the basic knowledge about the topics to be discussed in order to offset the knowledge gap.

However, such definitions are not without resistance and contradiction. For instance, designers define both moderators and technicians. The former should be responsible for keeping the discussions on target and in order; the latter are supposed to solve technical problems for participants. However, as pointed out by participants themselves, the actors who occupy these positions may not always play their roles well. Some of the moderators may not fully recognize the neutral position they should hold and become too involved in the discussions. In this case, they contradict the designers' endeavor to define them by giving themselves another identity, participant as well as moderator. Technicians, as another example, do not realize their defined roles when performing incompetently. Such resistance or an alternative definition is possible precisely because each actor has the potential to redefine its position through his relations with the technological actors. Moderators can redefine themselves because they directly engage with

the technologies, specifically the chat room. Their relation with the chat room is not only that they can manage the space, but also that they have the technical capability to speak out as participants. Designers, in contrast, do not directly connect to the chat room in function and, therefore, lack total control over moderators. The same is with technicians. Technicians connect to technologies through their knowledge of the technological actors. When such knowledge does not fulfill their obligation to troubleshoot for the participants, the connection becomes weak and so their role is weakened.

Another type of resistance stems from the unexpected actors. Law (1992) pointed out that the efforts of translation are more effective if the responses and reaction from other actors to be translated are anticipated. Resistance to the translation is, thus, found when unexpected actors join the network. When designers decide to use the Internet to conduct the discussions, they are often convinced by the ability of the net to transcend time and space. In other words, they expect that time and space should not be relevant anymore. However, the reality is that participants have their relations with time and space, which means that they have to exist in locations within a timeframe. As a result, the time and the space actor were both mentioned quite often by participants (175 and 108 times, respectively). This means that both time and space are involved in the network despite some actors' expectation of their continued irrelevance.

Capitals. Technical capital makes inequalities in two ways. One is to discriminate fractions of participants by varied accumulations of technical capital, which are indicated in both the establishment and the maintenance of the relations with the technologies. The accumulation is furthest from success when respondent 2744 said, "I was away from home and they had no computer." The accumulation becomes very close when respondent 62 said, "I had gone onto the

site before and it tld me that I needed to upgrade to your new Java. I did that and it would go to the next screen and it told me congratulations, you have successfully nstalled Java. I rebooted the computer and when I would try to log onto the diecussion group, it told me again that I would need to download your new Java. Again, It told me congratulations, et. It still will not work. So, I missed both sessions."[iii] Only respondents whose hardware is capable and whose skills are sufficient can successfully establish a structural relation with the technologies, i.e., acquire the technical capital. However, in order to sustain the capital, participants have to keep their relationship alive. Some participants who successfully participated in the first several rounds of discussions still encountered technical failure in the later rounds of discussions. In this case, inequalities also emerge when the rate of accumulation varies, which means that some of the relations with technologies stabilize more quickly than the others.

The second way for technologies to make inequalities in eDeliberation is through the unequal convertibility between technical and other capitals. Economic capital can be converted into technical capital when a broken computer is sent to a shop and gets repaired. Social capital can be converted into technical capital when a husband fixes the computer and a wife can join the discussions. The conversion happens in the other way around, too. Technical capital can be converted into symbolic capital when a fast-typing participant seems to convince other participants of the value of her opinions with her eloquence. However, the ability to convert between capitals is not equally distributed among people. If the fast-typing participant does not have the cultural capital to show that she not only types fast, but also sounds knowledgeable, her chattiness may not gain her a good reputation.

It was found that females, older people, and people with lower incomes reported a higher tendency in encountering the technical problems than did males, younger people, and people

with higher incomes[iv]. The results show that the accumulation of technical capitals and the ability to convert other capitals into the technical type vary among participants in eDeliberation. It is particularly problematic when such varied accumulation and convertibility correspond to existing patterns of inequalities such as those between males and females. In this sense, existing inequalities are reproduced in eDeliberation.

Network. The distribution of actors with varied capitals defines the parameters of the network. The size of the network is estimated by the number of categories of actors rather than the number of individual actors. The power of the network is suggested by the amount of capitals that are associated with all the actors. Although the eDeliberation projects involve several thousand participants, the relatively few types of actors suggest that the network is not influential yet. One important actor that is missing in the network is government, which is supposed to be responsive to the results of citizen deliberations. However, the two projects under examination do not have any inputs in the governmental decisions. Another missing actor is politicians. The projects have not yet involved political actors in their network and, thus, have no ability to mobilize and translate them.

The dynamics of the network are traced by comparing the answers obtained after the three rounds of discussions. The first survey was conducted in October, 2004, the second in January, 2005, and the third in April, 2005. Stalder and Clement (1997) claimed that '(d)efining a beginning is a necessary but "artificial" analytical operation based on the interests of the analyst within his/her particular empirical situation.' The beginning of the network of the two eDeliberations started as early as the time when funders approved the proposals. Both funders and researchers were actors who belong to existing networks. Funders such as the National

Science Foundation belong to the field of government, and researchers such as professors and graduate students belong to the field of academia. The attempt of these existing actors to grow a new domain in order to align experts, ordinary citizens, technologies and other actors for the interest of this network marks the starting point of the emergence of this network.

The development of the network often follows two steps: first, adding new actors/deleting uncoordinated actors, and second, translating the actors. It can lead to both convergence (i.e., stabilization of the network) and divergence (i.e., disintegration of the network) depending on how well the inclusion and translation work (Stalder & Clement 1997). I have discussed how some actors grab more power than other actors through their struggle to translate each other. The consequence of this struggle is stabilization at the cost of exclusion. On the one hand, the stabilization is reflected in the reasons for non-participation, which became quite predictable as time went on. Post-Discussion 3 answers had a limited scope of reasons, which never exceeded the range of previous answers. On the other hand, the stabilization was achieved by excluding uncoordinated actors. For example, respondent 1452 answered that "I no longer care to participate in this survey" in the post-discussion 2 survey. He/she disappeared from the network and so did his/her voice.

Therefore, whether one individual joins the discussions or not is no longer a personal choice, but rather an indicator of the stableness of the network that the eDeliberation practices enabled. A network is most durable if it can include a large variety of actors and, at the same time, if these diverse actors are able to come to a consensus on the meaning of the network (Bijker 1994, p. 86). Therefore, the two eDeliberation networks here are not very durable due to their failure to include and keep a diverse body of actors. The networks easily dissolved when

the more powerful actors (e.g., funders and designers) decided to end the projects and dismiss the relations.

Discussions and conclusions

This paper examines participatory inequality in the sub-field of eDeliberation. The findings show that first, existing inequalities in political participation such as those associated with education, income, age, race, and gender are reproduced in eDeliberation. However, the reproduction is not automatically there, but through the unequal distribution of functioning capitals in the sub-field, especially technical capital. Inequalities are made into being when the accumulation rate of capitals and the ability to convert capitals vary among actors. Specifically, the SES-disadvantaged groups often have more difficulties in establishing and maintaining a relationship with the technologies available in the field. They are also found to be less successful in converting other capitals into the technical capital in need.

When political inequality is treated as a relational effect of an actor-network, we would be able to avoid on the one hand, reducing inequality to individual decisions (e.g., they choose not to participate), and, on the other hand, totalizing the network as a singular force (e.g., it is all because of the system). Rather, political inequality is constantly in making when different actors are struggling to translate each other, which at the same time reshapes the network. The research agenda derived from the concept of technical capital prioritizes the following items when examining social inequality: field or network – the space in which the relations exist; materials or actors – entities that constitute the space; logic or translation – rules of exchange that hold the space together; accumulation or durability – the stableness of the space; and convertibility or struggle – the transformation of the space.

This paper also provides some suggestions to online deliberation practitioners. As both designers and examiners of the practices, we have not paid enough attention to the significant role of the technologies. ICTs in digital democracy are not simply tools that may succeed or fail in supporting the democratic goals we are trying to achieve. Technologies are not neutral objects, but functioning actors that can discriminate other actors through the unequal (or asymmetrical) relations. When trying to mobilize a network that connects technical and other actors, we have to consider whether certain technologies would disadvantage some actors due to their inability to accumulate and convert the relations with these technologies (i.e., technical capital). One such attempt was made by Iyenger and his colleagues (Iyengar *et al*. 2003) when they tried to use voice-based discussion to replace written text discussions, which may reduce the typing difficulties faced by some of the SES-disadvantaged groups. Future digital democracy projects have to carefully choose the technologies to be used with a clear awareness of the inequalities they may produce or reproduce.

[i] Bourdieu uses the structural relation to criticize the tendency among sociologists to exclusively focus on visible social connections and interactions, as well as the Saussurean tradition that only concerns symbolic representations.

[ii] ANT provides the insight that technologies and their influences are not always socially constructed. Technologies do not determine human actors, nor do human actors determine technologies. Both of them are part of the network and have to exert their influence within the network. This understanding differentiates an actor-network analysis from the popular social network analysis. The social network analysis recently became popular mainly because new ICTs allow actors to be connected quickly and easily. But ironically, ICTs themselves are pushed into the background when scholars focus on individuals or organizations that are connected and treat technologies as channels or tools that connect. Another important network theory comes from the concept of network society (Castells 1996; van Dijk 2006). ANT is quite different from both theories because it insists that society is always organized as networks and technologies have never been absent. Castells and van Dijk tend to argue that the logic of information networks, which are managed and processed based on technologies, marks a new structure of society. ANT, however, argues that the so-called network society is only a network that emerged out of the existing network (e.g., the industrial society) while some of the actors, such as ICTs, are able to align other actors and translate them using their logic.

[iii] Typos and grammar mistakes in direct quotes were not corrected.

[iv] A statistical analysis was conducted to see whether the SES groups that are less likely to participate in eDeliberation differ from other groups in terms of technical capital. A series of logistic regressions were operated to test the effects of demographics on the most mentioned reason for non-participation, i.e., technical problems.

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Table 1.1

Mean Differences between Enrolled and Non-enrolled Respondents Broken Down by Demographics.

	ED2K		HCD	
	Enrolled (N = 1,054)	Not-enrolled (N = 1,273)	Enrolled (N = 1,951)	Not-enrolled (N = 1,167)
Education years	13.48***(1.85)	13.12(1.83)	14.93***(3.17)	14.49(2.70)
Age	43.93***(15.47)	40.59(14.43)	45.54(14.67)	44.67(15.50)
Income	NA	NA	49399.06***(20120.50)	43499.65(18242.50)
	White (N = 1,827)	Non-White (N = 476)	White	Non-White
Enrolled	44%	48%	NA	NA
	Male (N = 1,160)	Female (N = 1,167)	Male (N = 1,500)	Female (N = 1,618)
Enrolled	49%**	42%	60%*	65%

+p <.10, *p <.05, **p <.01, ***p <.001

Note: Standard deviations are included in the brackets after means.

Table 1.2

Regressions Predicting Number of Attendance

	ED2K		HCD	
	Block 1	Full	Block 1	Full
Block 1				
Education	.078*(.038)	.076*(.038)	.137***(.013)	.140***(.013)
Male	.0004 (.138)	.010(.138)	-.028(.074)	-.027(.076)
Age	.315*** (.004)	.266***(.005)	.076**(.003)	.063*(.003)
Income	-.040 (.001)	-.033(.001)	-.003(.010)	-.003(.011)
Whites	.096**(.180)	.089**(.180)	.085**(.092)	.083**(.092)
Block 2				
Married		-.015(.187)		.025(.085)
Schedule flexibility		.105**(.034)		.018(.002)
Children under 18		-.017(.067)		-.026(.042)
Fulltime job		-.071*(.161)		-.011(.088)
Student		-.074*(.309)		-.002(.216)
N	964	964	1,387	1,387
Adjusted R-Square	.13	.14	.03	.03

+p <.10, *p <.05, **p <.01, ***p <.001

Note: Entries are standardized regression coefficients. Standard errors are included in the brackets. The F-tests of all models are significant at a level of $p < .001$.

Table 2

The Coding Agenda for Reasons of Non-participation.

Category	**Definition**	**Examples**
Actors	Entities that do things (Latour 1991, p. 241)	
Funders	The entity that sponsors the projects	Not found.
Designers	The entity that designs the projects	"I didn't get the mail notice till it was too late to do it."
Moderators	The entity that moderates the discussions	"healthcare wasnt brough up by the mediator"
Technicians	The entity that provides technical support	"I call Knetwork, was on hold for 45 min. Finally got and operater she could not get in even with my pass"
Participants	The entity that has the potential to participate in the discussions	"I am 75 yers old and I forget to do so."
WebTV / Computer	The entity that serves as the	"our computer crashed that week."

	hardware of participating in the discussions	
Internet	The entity that connects participants to the space of discussions	"Flooding had knocked out power and internet services."
Chatroom	The entity that constitutes the space of discussions	"Although I have a PC, I have never chatted back and forth and was afraid I couldn't handle it."
Time	The entity that is about when the discussions happen	"When the time was calculated for Arizona, the surveyor neglected to account for the fact that Arizona is on Mountain STANDARD time all year."
Space	The entity that indicates the physical locations of actors	"I live in Florida and was dealing with hurricanes"
Capitals	Forms of accumulation and convertibility (Bourdieu 1986)	
Economic	Money and property	"wrote earlier that I had changed my mind

	ownership	about participating in this on line debate .You oud hav eo pay me big bucks,,did not feel it was a good use of my time”
Social	Connections and obligations	“My son & daughter-in-law; were having twin girls!!!”
Cultural	Dispositions, cultural goods, and institutional qualifications	Not found.
Symbolic	Legitimate competence and recognition	“My husband was out of town on business and my computer was having technical difficulties. Since he is the computer genius, I was unable to attend it.”
Technical	Structural relations with technologies	“Have never used chat rooms or on line discussion things. Wouldn't know the first thing about how to go about it.”
Network	A configuration of relationships among heterogeneous entities (Callon 1993, p. 263)	

Size	Number of actors the network can align	Not applicable.
Dynamics	Emergence, development and stabilization	Not applicable.

Appendix 1. Measurements of variables.

Education was measured as year of education (ED2K: *M* = 13.30, *SD* = 1.84; HCD: *M* = 14.34, *SD* = 3.10). A continuous version of *age* was used in analyses (ED2K: *M* = 42.19, *SD* = 15.17; HCD: *M* = 46.34, *SD* = 15.53). *Gender* was a dummy variable, with "1" referring to male and "0" to female. Fifty percent of ED2K recruitment respondents and 48 % of HCD respondents were male. *Income* used an interval version in HCD: *M* = 64,110, *SD* = 53,660. The measure was not available for every respondent in ED2K (746 out of 2327 respondents answered the income question), but among those who answered this question, the statistics are as follows: *M* = 64,150, *SD* = 52,670. In ED2K, 78% of recruitment respondents were Whites, 8% Blacks, 7% Hispanic, 3% Asian, 1% American Indian, and 3% others or don't know. The *race variable* was re-coded into a dummy one, with "1" referring to Whites (78%) and "0" to non-Whites. Not everyone gave us their race information in HCD, but among those we know (1949 out of 3134 respondents), it showed almost the same racial composition as ED2K (80% Whites).

Enrollment. Participation is measured by two variables: Enrollment and attendance. The ED2K recruitment survey asked for respondents' consent to participate in the study. Among the 2,327 people who were asked to participate in the experimental discussion panel, 45% (1,054) consented to join. The HCD recruitment survey followed the same procedure with the addition that only respondents who completed the baseline surveys were assigned to discussion groups. There were 2,406 out of 3,118 (77%) respondents who consented to join, and 1,951 out of those 2,406 (81%) respondents filled out the baseline survey. As a result, 63% of recruitment respondents were assigned to the discussion groups.

Attendance. The attendance variable is a continuous measure of number of discussions one participated in. There were nine rounds of discussions in ED2K, but since the first and the

last round were not focused on issue debates, attendance was calculated based on showing up at any one of Discussion 2 to 8 (M = 2.12, SD = 2.27). A continuous measure of the number in attendance was also available in HCD (M = .97, SD = 1.37). The mean was lower here because there were only four rounds of discussions in HCD.