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## **Technologies of democracy: participation and access in the university environment**

**Abstract:** Although Canada globally ranks among the top ten countries for per capita Internet use (ITU, 2001; Statistics Canada, 2002), roughly one half of the population is still not online. The Canadian government has supported numerous initiatives aimed at bridging the 'digital divide' between technological haves and have-nots, recognizing, at the same time, that simple physical access to information and communications technologies (ICTs) will not guarantee their universal use (Muir & Oppenheim, 2002).

In key areas of civic participation – information-gathering, deliberation, and decision-making – new venues are appearing, in which participation necessitates access to ICTs and the ability (or willingness) to use them. Since a majority of university students fall within the specific age group and category of users which are portrayed as least resistant towards the adoption of new technologies, this population was targeted for an exploratory survey of information and computing literacies, and of their perceptions of the usefulness of technological applications such as Internet voting as a means to improve civic participation (both at the campus level and in society at large). The study was conducted in February and March, 2002 at a major Canadian university, with 100 randomly selected students. The aim of the research was to explore how university students are using computer networks to participate in civic life, especially in relation to their involvement in (and input on) higher education policies and university life. In the process, many questions were raised, particularly around the notion of access to and reliability of public information; equality of access to infrastructure and information services, protection of privacy, and quality of discourse.

**Résumé:** Bien que le Canada se classe globalement parmi les dix premiers pays quant à l'utilisation d'Internet per capita (ITU, 2001, Statistics Canada, 2002), environ la moitié de la population n'est pas encore en ligne. Le gouvernement canadien a lancé de nombreuses initiatives visant à réduire le « fossé numérique » qui sépare les citoyens ayant accès aux technologies de l'information et des communications (TICs) et ceux qui n'y ont pas accès, tout en reconnaissant le fait que le simple accès physique aux TICs ne garantira pas à lui seul leur usage global (Muir & Oppenheim, 2002).

Dans des domaines clés de participation communautaire—collecte d'information, délibération, prise de décisions—de nouvelles avenues commencent à poindre, pour lesquelles il est nécessaire non seulement d'avoir accès aux TICs mais également de savoir les utiliser. Comme la majorité des étudiants universitaires se trouvent dans la catégorie d'âge des usagers étant décrits comme les moins hostiles à l'adoption des nouvelles technologies, cette population a été choisie pour une étude exploratoire sur la culture informationnelle et informatique. L'étude vise à dépeindre leurs perceptions sur l'utilité des applications technologiques, comme par exemple le vote par Internet, dans le but d'encourager la participation civique (sur le campus universitaire et dans la société en général). L'étude s'est déroulée en février et mars 2002, sur le campus d'une grande université canadienne, auprès de 100 étudiants sélectionnés au hasard. Le but de cette recherche était d'explorer comment les étudiants universitaires utilisent les réseaux informatiques dans leur vie civique, particulièrement par rapport à leur participation dans les politiques d'enseignement supérieur et dans la vie universitaire. Parallèlement, plusieurs

questions ont été soulevées, particulièrement autour de la notion d'accès à l'information publique et de sa fiabilité, sans oublier l'égalité d'accès aux infrastructures, la protection de la confidentialité et la qualité des propos.

## 1. BACKGROUND

A great deal has been written on the topic of new media and their potential for increasing democratic participation. The advent of ICTs was viewed as a means to move toward what Lievrouw (1994) calls a “shift from an information environment that is *informing* (i.e., reliant on traditional ‘mass’ media and information systems, and therefore on media ‘consumption’) to one that is *involving* (reliant on discursive information systems, and therefore on information seeking and communication)” (p.350, emphasis in original).

Katz and Rice (2002) observed that much of the literature in this area was framed either in dystopic or utopic terms. Dystopic visions warned that the Internet will widen the gap between haves and have-nots, erode political legitimacy and even “destroy local and indigenous culture (...) reduce community involvement (...) lower the quality of intellectual product” (Katz and Rice, 2002, p.7). Utopian visions, such as that put forward by Rheingold (1993) advance the notion that computer-mediated-communication, setting aside limitations of time and space, will allow participation in virtual community, fostering the development of political and civic awareness and engagement.

The emergence of a vast body of research on “digital democracy” (and variants such as e-government, teledemocracy, cyberdemocracy, etc.) points to the interest about research on the effects of ICTs on civic participation. Various studies measured Internet access against factors related to civic and community involvement and social interaction (e.g., the American Syntopia project’s national random studies on the social consequences of Internet use, undertaken in 1995, 1996, 1997, and 2000 (Katz and Rice, 2002)). Preliminary assessments point toward the modest results and consequences of the Internet for civic participation. As Katz and Rice (2002) note, while “it facilitates greater online political activity and information exchange, [the Internet] does not seem to influence voting [or] other offline political activities.” (p.151).

While the potential of the Internet for transforming politics, the nature of government, and overall civic participation has yet to be demonstrated, many government functions have already begun to move to the web. The electronic voting (e-voting) has been adopted in the US and elsewhere, and experiments with Internet voting (i-voting) have been undertaken, with notable examples in the 2000 Arizona Democratic Primary and several i-voting pilots in local British elections in 2002. Large-scale initiatives, such as the UK’s e-Democracy initiative, were ostensibly motivated by a crisis of disenfranchisement, particularly among younger citizens (*In the Service of Democracy*, 2002, p.16). In Canada, Barrie (Ontario) became the first Canadian municipality to move to an electronic voting system, in 1997 (Foster, 2000). Changes were also made in 1999-2000 to the Canada Elections Act, which included a provision stating that the “Chief Electoral Officer may carry out studies on voting, including studies respecting alternative voting means, and may devise and test an electronic voting process for future use in a general election or a by-election. Such a process may not be used for an official vote without the prior approval of the committees of the Senate and of the House of Commons that normally consider

electoral matters” (Canada Elections Act, 2001). Meanwhile, Canadian government information is increasingly being offered in electronic form, as part of the large E-government initiative, which aim is to make Canada the world leader in terms of connecting citizens to their government electronically via computer or wireless connections. Increasingly, new venues for civic and political participation are appearing, in which participation necessitates access to ICTs and the ability (or willingness) to use them.

A key consideration in the use of ICTs for democratic participation is equity of access. Computer ownership and access has been consistently linked to privilege (NTIA 1995, 1998; Hoffman, Novak, & Schlosser, 2001) – and, in the case of i-voting, for example, any inequality of access becomes a major problem. As Deborah Phillips, president of the Voting Integrity Project, explains: “think of [Internet voting] as a subway train pulling into the station and the whites get to run through an open gate to the train and the minorities have to go through a turnstile, one-by-one. When that train leaves the station, there are going to be disproportionately more white voters on that train” (Phillips, quoted in Gibson, 2002).

While some recent American literature has suggested alternately that the digital divide at the national level is narrowing (Compaine 2001; Simons 2001), the IFLA Social Responsibilities Discussion Group characterizes the gap between information rich and poor as growing at both the international and national level – even within the American context they note that “although the United States is rich, its distribution of wealth and information is becoming more unequal” (Kagan, 1999). Canada, which ranks among the top ten countries globally for per capita Internet use (ITU, 2001; Statistics Canada, 2002), still reports that roughly one half of the population is still not online. Muir and Oppenheim (2002) document the national initiatives of the U.S., Australian and Canadian governments aimed at lessening this inequality, noting that access to Internet and computing facilities alone will not guarantee their use. When considered in relation to the problem of assuring equity in participation in civic and political life online, questions of access and participation take on a new dimension.

In order to assist in framing the debate on access, research into the opportunities for democratic participation enjoyed by a small group of technological ‘haves’ was undertaken. Since a majority of university students fall within the specific age group and category of users which are portrayed as least resistant towards the adoption of new technologies (the stereotype being the affluent young male ‘surfing’ cyberspace (Hacker & van Dijk, 2000)), but at risk for low political participation levels, this population was targeted for this exploratory survey. The aim was to assess the general computing literacy of this user group and its perceptions about the usefulness of digital technologies such as Internet voting as a means to improve civic participation (both at the campus level and in society at large).

## **2. OBJECTIVES AND METHODOLOGY**

The aim of this study was to explore patterns of students’ use of ICTs, and their perceptions of the role of ICTs in enhancing participation in civic activities, especially as it relates to their involvement in (and input on) higher education policies and university life (Caidi, 2001). The key research questions investigated included 1) how familiar were students with technology, and

what were their use patterns; 2) whether personal communication technologies, such as the Internet, enhance or diminish social community and participation in university life; 3) the barriers to access (infrastructure, skills, etc.); 4) what links exist between online and offline activities (e.g., Internet meetings, face-to-face meetings, paper and online petitions and debates); which of these activities are deemed most fruitful by students, and for what purposes? Whether they encourage more participation? Finally, how is participation defined by students themselves?

At the heart of the research lies a larger question: how is the culture of the 'netizen' evolving, and what is denied to those who cannot (or will not) enter the virtual sphere? However, given the modest nature of this study and the complex nature of the questions investigated, our aim was not to provide definitive answers, but rather a snapshot of this small segment of the student population and to identify any trends or areas of uncertainty that might benefit from larger-scale investigation.

The study was conducted in February and March 2002 at a major Canadian university. Because it was exploratory in nature, the sample was non-representative of the overall population of the university, and consisted of 100 students who volunteered to fill out a nine-page questionnaire. Students were solicited via notices, e-mails submitted to listservs, electronic bulletin boards and word of mouth, and were compensated \$10 for their time.

The questionnaire consisted of multiple-choice questions as well as some open-ended questions. It was broken down into three parts: Part I asked them about their experience with computers (skills and training; access to and familiarity with various hardwares and softwares; current use of computers and the Internet). Part II dealt with computer usage for civic life: students were asked a series of questions about their motivation for using computers and accessing the Internet, their current experience with political activities via technological means, their perceptions of Internet voting including what they saw as advantages and/or inconveniences of voting via the Internet, as well as their involvement in campus life, and their sense of whether using a computer to participate in the life of campus affected the way a person thinks and makes decisions differently than if a person met with others and went to gatherings. Finally, Part III collected some demographic data on the students (including gender, ethnic background, level of education, languages, and overall outlook toward politics and public affairs).

In keeping with the spirit of the study, we asked students how they found out about the call for participation in the study: overall, our success rate with posters was low (an average of one respondent per poster), while e-mail and word of mouth had an exponential effect. We also attempted to track down the students' disciplines of study in order to determine what type of cross-section of the student population was represented: over 35 different programs of study were represented, with the largest contingents coming from computer science, undergraduate arts and science programs, and information studies.

### 3. FINDINGS

#### 3.1 Sample Characteristics and Demographic Data

The general characteristics of the sample are summarized in Table 1. For the sake of comparison, we have included (whenever available) in the table the characteristics of the general student body at the university from where the sample was taken.

	<b>Sample characteristics</b>	<b>General Student Body at University</b>
<b>Age</b>	Under 25 years <b>66</b> 25-30 years <b>21</b> 31-40 years <b>11</b> 41-50 years <b>01</b> 51-60 years <b>01</b> over 60 years <b>00</b>	Median age of students in 2000 for full-time (FT) and part-time (PT) graduate (grad) and undergraduate (UG) students: FT UG: <b>21.9</b> PT UG: <b>28.2</b> FT grad: <b>30.2</b> PT grad <b>36.2</b>
<b>Gender</b>	Male <b>45</b> Female <b>55</b>	Percentage of female students in 2000: FT UG: <b>55.9</b> PT UG: <b>59.5</b> FT grad: <b>52.8</b> PT grad <b>64.1</b>
<b>Ethnic background</b>	Native /First Nations <b>0</b> Asian Canadian <b>36</b> Black/African Canadian <b>5</b> Hispanic/Latin <b>1</b> Middle Eastern <b>4</b> White <b>29</b> Other: <b>27</b>	Data not available, but students from Asian origin comprise the largest group of international students at this university
<b>Level of Education</b>	Undergraduates <b>63</b> Graduates <b>37</b>	Figures for 2000 / 2001: Undergraduates <b>82%</b> Graduates <b>18%</b>
<b>First Language</b>	English <b>58</b> French <b>2</b> Other <b>40</b>	
<b>Political Affiliation</b>	Liberal <b>42</b> Republican <b>4</b> Conservative <b>1</b> Democrat <b>10</b> Independent <b>19</b> Other <b>26</b>	

**Table 1: Characteristics of the sample**

In general, while the sample population appeared to approximate the characteristics of the larger student body at this university in terms of gender, age and possibly ethnic background (although data in each of the categories were not precisely comparable to the survey data gathered), the

sample population had slightly more than twice the university-wide percentage of graduate students. The largest subgroup in the “other” category, under ethnic background, had roots in the Indian Subcontinent (India and Pakistan). Interestingly, 40% of the respondents reported having a native language other than English.

### 3.2 Computer Literacy

In the sample surveyed, 100% of respondents used computers, with 98% using a computer daily, and 2% using one a couple of times per week. Computer training levels were generally high, with the average number of courses taken being just under 6. One respondent had over 40 courses and one had never received any training. The three most common venues for acquiring computer skills and training were:

- High school                      **66%**
- University                       **58%**
- Friends                           **47%**

Respondents had high rates of access to computers: 91% of respondents had access to a computer at home, using it for an average time of 3 hours per day (with one student reported using the home computer for 10 hours per day). Among those who owned a computer, a majority owned PC compatible desktops running MS Windows.

Access at the university was also significant: an overwhelming 99% reported having access to computers at the university, using them for an average of 2 hours per day. Interestingly, 32% of students asked to comment on the statement: “everyone at the university had the same opportunity to use technology” disagreed or somewhat disagreed with it. This perception of an inequity of access is interesting in that it does not seem to corroborate the findings. When asked about access to computers at work, 58% of the respondents replied that they did not currently work. Of those who did, 33% used a computer at work for an average of 3.5 hours per day.

Overall, the average time spent using computers was just under 6 hours per day. However, a group of ‘super-users’ emerged: 19 of the respondents reported using computers for a total of 10 or more hours per day, up to a maximum of 15 hours per day.

As expected, the use of e-mail was very high, with 95% of respondents using it daily and the remaining 5% using it a couple of times per week. Taken altogether, these numbers appear to indicate a higher than average amount of time spent using computers by this sample as compared with the overall Canadian population: figures for 2000 show that the majority of Canadians who had Internet access spent an average of 1-7 hours per week on the net at home (61%), and that, of those who spent time on the Internet at work in the previous week, 61% spent an average time of 1-7 hours per week on the net at work (Dryburgh, 2002). Perhaps not surprisingly, given their unusually high use figures, 16% of students surveyed reported seeking medical attention due to physical pain or discomfort from using a computer. Physical problems cited included, shoulder, back, wrist and eyestrain, tearing, headaches, repetitive strain injuries, eye sensitivity, and blurred eyesight.

With regard to training, there seems to be a rise in the number of classes taken by respondents in the age group '26-30 year-olds' as compared to the 'under 25' group, with the numbers dropping in the 'over 31' age group. The latter group was also more than twice as likely as the 'younger' groups to be self-taught. Moreover, we found that male respondents (42%) were more than twice as likely as female respondents (16%) to have taught themselves. Respondents of Asian heritage had the highest average number of classes taken, at just over 8 courses, followed by Caucasian respondents (just under 6 courses).

The following trends emerged from the data as it relates to general purpose of computers and the Internet by the sample of students: four of the most common purposes for using the Internet by the student sample included: information gathering and research (98%), library resources (90%), news (87%) and travel information (81%). Moreover:

- 95% of students use e-mail daily, while 5% use it a couple of times per week
- 53% of students list the establishment of friendships and social contacts and 50% listed planning group activities as one of their primary uses of the Internet
- 40% listed the computer as their primary mode of communication with colleagues and friends
- 36% use chat groups
- 36% use online bulletin boards
- 37% use the Internet to get involved in professional organizations, while 53% reported a primary use of the Internet was to establish professional contacts or interchanges.
- 89% supported the use of class e-mail lists for discussion and posting papers
- 66% listed e-mail lists (or the Internet (63%)) as a primary source of information on campus life

Overall, the majority of students agreed with the statement that computers were indispensable to their personal, academic, and professional lives.

We found that the pattern of use varied slightly based on gender: when asked what their primary uses of computers were, female respondents were more likely than their male counterparts to cite communication with friends or colleagues (including professional contact) as a primary use of the Internet. Males were more likely to cite entertainment as a primary use (including sharing or expressing opinions and non-work purposes). Other uses of the Internet among male respondents included: reading the news, games and entertainment, downloading applications, as well as shopping, chat, bulletin boards, learning about professional organizations, and website maintenance. Female respondents, on the other hand, were more likely to use it for class work, travel information, research and information gathering, and library searches.

Asian respondents and those self-identified as 'other' were also almost twice as likely to use the Internet to get involved in professional organizations (as mentioned above, the largest subgroup in the "other" category had roots in the Indian Subcontinent, notably India and Pakistan). Moreover, the Internet was used for checking the news by 100% of Middle Eastern and 'other' respondents. It seems likely that this stems from the presence on the Internet of international viewpoints and coverage.

It appears that the sample met or exceeded our initial expectations for access to and use of technology. Taken as a group, the respondents did, in fact, match our initial conception of a group of technological 'haves'. Despite the universal availability of ICTs for this group, small differences in computer use did emerge, both between individuals and between demographic subgroups, as noted above.

### 3.3 Use of ICTs for Civic Involvement

The section of the survey that dealt with students' perceptions and/or habits of ICT use for civic involvement (participation, deliberation and decision-making) elicited the following results:

- 55% of respondents list sharing or expressing opinions as their primary use of the Internet
- 47% have petitioned or otherwise contacted a public official about an issue or public policy via the Internet
- 46% have contacted a public official via e-mail
- 84% believe computers can enhance the participation of students in campus life, however, 76% feel that using a computer to participate in campus life affects the way a person thinks and makes decisions differently than if a person met with others and went to gatherings.

As might be expected, student participation in campus life varied considerably:

- 39% of students were not actively involved in any campus groups.
- Of the 61 respondents who did participate, 32 were involved in only one group.
- A highly active group emerged: 21 students were involved in 3 or more groups, with 2 of these students involved in 5 different groups.

Despite this variation, a majority of students (52%) agreed that participation of the students in campus life at this university was low, with only 3% characterizing it as high. In answer to the question of what constituted 'participation' in campus life, the breakdown of responses was as follows:

- 'getting involved in one (or more) student groups' (76%)
- 'getting information on various issues of relevance to student life' (69%)
- 'voting for student representatives' (55%)
- 'serving on councils and committees' (51%)
- 'organizing or attending protests' (34%)
- 'knowing where all the good parties' (31%)

These responses seem to indicate an equally important attention put on information gathering and overall awareness about campus events (even if with minimal involvement) than on active participation, leadership and decision-making, and overall activism. The use of online means of participation in campus life and in civic activities elicited mixed answers. Some respondents referred to computers almost as extension of their bodies ("It [the computer] is part of me"); others made mentions of the "increased psychological distance" associated with computer-mediated participation, which they viewed as an aid to free expression or as necessary to a more reasoned deliberation:

- "Using a computer gives a person more time to contribute more developed well thought out ideas because of time factors and nervousness caused by human interaction"



- “The computer makes a huge impact on a person’s ‘campus life’. It upgrades it significantly, more efficiently.”

Others, on the other hand, felt that “it’s hard to duplicate human interaction” and that “nothing can ever replace social interaction. Facial expression, vocal intonation and gestures influence people’s opinions.” Several respondents mentioned isolation and the loss of “intimacy” usually associated with face-to-face meetings. As one respondent noted, “people need more active participation than just sitting at home.” Other reactions include:

- “Internet is good for getting information, but face-to-face is best for getting things done.”
- “People won’t participate no matter what you do.”
- “A computer allows you to participate without really [being] actively participative. My idea of participation involves more than clicking a few buttons on a mouse.”

When asked about their experience and feelings about Internet voting, students had equally mixed feelings: despite concerns about security, privacy, and equity of access, a majority of students supported Internet voting at the campus, city and federal levels (47% of students surveyed expressed having already used Internet voting). The 58 respondents who raised concerns about potential disadvantages of Internet voting mentioned security as a major problem. They noted fraud, threat of hackers, loss of privacy, tracking of the votes and coercion as potential risks. Most importantly, the data suggest that students’ support for Internet voting is affected by the nature of the elections: the support for online voting seems to correlate inversely with the importance in scale of the election: while 88% of students expressed that they would vote for a student representative online, the numbers decrease when it comes to voting for a mayoral candidate (57%) or for an MP (55%) via online means.

Perhaps the discrepancy between perceived security risks and the willingness to use the technology all the same can be partially explained by the huge importance ascribed to convenience. Written response questions showed ‘convenience’ to be the most often cited advantage of online voting, followed by efficiency in savings of time and expense for administering the vote, the voting process itself (“less hassle”, “busy lifestyle”), and the ease in tallying the results.

However, concerns around equity of access were acknowledged by many, with many references made to ‘the poor,’ the ‘elderly’ (e.g., “there is still a major age gap: the 40 and under have knowledge and access disproportionate to older Canadians”) and ‘those who are not comfortable’ or ‘familiar’ with technology.

While the study attempted to measure the role of ICTs and information literacy levels in civic involvement, it is clear that more in-depth questioning would be required to elicit focussed information on each of the aspects included here. In many cases, the line between formal and informal channels for participation is somewhat blurred. For example, 33% of respondents had used multi-user Internet games – an informal channel, but one that may enable various types of communication (e.g., users may choose to stop and have a political or literary discussion, while the game continues around them). Conversely, while 55% of respondents cited sharing or expressing opinions as one of their primary uses of the Internet, these opinions might not necessarily relate to reasoned political debate.

#### 4. DISCUSSION

Despite the modest nature of the survey, our findings appear to shed light on some of the research questions investigated. Communication technologies are indeed used in numerous ways to enhance the civic participation of respondents. Yet, as written responses from students indicate, a real value is placed on face-to-face communication. As one respondent puts it: “a computer allows you to participate without really [being] actively participative. My idea of participation involves more than just clicking a few buttons on a mouse.”

Moreover, many of the students surveyed were aware of equity of access issues, and were quick to point out areas of inequality when considering tying democratic participation to technology. As one respondent explained, when asked if he could think of any drawbacks to online voting: “not all the people have the same opportunities. Not everyone has Internet access. This may mean that people who cannot afford a computer have less possibilities to vote.”

Despite students’ awareness of the serious security, privacy, and equity of access issues, findings show that they were nonetheless willing to vote online. The nature of the elections, however, seems to influence their support for online vs. traditional voting methods: there is more support for voting online for a student representative than for a mayoral candidate, an MP, or the Prime Minister.

In fact, the students had identified a key area of contention in the literature on digital democracy. If the prospects for increased participation using online voting are generally positive, the technological analyses of i-voting in terms of security are markedly less so. Apart from general concerns around coercibility, vote selling, vote solicitation and control of registration, according to Avi Rubin at AT&T labs (Rubin 2001) numerous technologically-based security risks are present, including malicious payload (for example date-specific viruses or spyware piggybacked onto software purchased for other purposes could record or even change a vote – these interfering programs could be delivered by a person in the office, or more dangerously, remotely), denial of service attacks, and social engineering (“fooling people into compromising their security” [section 4]). Gibson (2002) also notes these dangers, citing viruses that may change votes without detection, vote-tampering at the election company, and site-jacking (similar to Rubin’s social engineering). Bruce Schneier, one of the world’s best-known cryptographers, recently reaffirmed these fears, stating: “A secure Internet voting system is theoretically possible, but it would be the first secure networked application ever created in the history of computers” (FIPR, 2002). Security and privacy is also hard to assess when election companies like Election Com, which ran the Arizona Democratic primary, have a policy of not releasing the details of the vote collection and tabulation to outside officials for competitiveness reasons (Gibson, 2002).

There is not enough evidence to say whether the sample surveyed would be less resistant to online voting if serious guarantees were made by Internet voting companies about the security and privacy issues. We can only assume that this would be the case indeed, based on the overall patterns of use of ICTs by students both in their personal, academic and professional lives. Overall, our survey revealed a sample population that was both ethically aware and technologically savvy. As our research progressed, it became evident that many of the students

had ceased to see interaction with ICTs as isolated from their 'real' lives, rather, they had begun to incorporate information technology into almost every aspect of their lives. As one respondent wrote, when asked about the role of computers in campus participation: "it [the computer] is part of me". Since a considerable amount of the respondents' time each day is spent using computers, it would appear natural that those interested in political participation would use the affordances of ICTs to that end, and to a large extent, the students appear to be doing just that.

The exploratory survey results hinted at an intermingling of social, professional, political, information and entertainment-seeking and academic activities on the web. Further exploration of the ways in which these functions are linked and differentiated may yield further insights into the developments on the 'electronic frontier' (Rheingold, 1993).

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