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INTRODUCTION TO IT&SOCIETY

ISSUE 1: SOCIABILITY

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Modern information technology (IT) has been affecting the way people live and work since at least the 1850s. Telegraph lines strung within and between cities created the first electronic "Internet." Suddenly, news, memos, personal communications, command and control directives, and monetary transactions could connect people thousands of miles apart. In addition to vastly enhanced capabilities to transact business, coordinate troops and the like, the ability to transmit personal messages revolutionized people's ability to conquer time and distance.

Three decades later the introduction of the telephone further enhanced business and personal communications. By the end of WWI, the telephone had become ubiquitous in business and was rapidly becoming commonplace in homes. Shortly thereafter, the rapid development and dissemination of radio receivers created yet another IT revolution; and, after WWII, pictures were added to sound with the development of television. The Internet now joins this long list of significant technological innovations.

A number of studies have shown that today's average adult American watches 2–3 hours of television, listens to 1–2 hours of radio, and spends nearly another hour on the phone or Internet *every day*. That translates into almost a third of our waking day spent with devices that did not even exist a century ago; and that represents, for most working adults, more than half of their leisure time spent with electronic media. Any set of technologies, tools or toys that reshapes so much of our time must have a profound impact on our daily lives. If who we are with and what we do each day defines a large part of what and who we are, IT obviously qualifies as a major agent of social change.

The establishment of this scholarly journal, *IT&Society*, is a testament to the profound effects of this ongoing revolution. Our central mission with this journal is to provide a platform for social science research studying the social, political, and economic consequences of information technology, in order to analyze, deliberate and debate on these social changes. We use the power of this new technology to produce new forms of scholarly communication and to disseminate them immediately and at no cost.

This inaugural issue of *IT&Society* is devoted to the topic that has engaged most scholarly and public attention about the Internet so far, namely sociability. Is use of the Internet related to less human contact of traditional sorts—by telephone, in person or postal mail? The topic of sociability may have generated enough controversy and data to warrant its own journal.

Function and Goals of IT&Society: The function of this journal differs from other journals in several respects. First, it can concentrate scholarly attention on a rapidly expanding, but still infant field of study—it allows us to do so in a timely manner. Given the lengthy turnaround time of traditional print journals, the important research findings may have actually changed before an article is published. An online journal allows us to disseminate the most cutting-edge research as soon as it becomes available. Finally, we hope that *IT&Society* will bring together research from a number of different academic fields—an online journal encourages cross-disciplinary research in ways not possible with length-restricted print journals.

The articles in this inaugural issue of *IT&Society* are a collection of the most recent and important research results invited from the leading experts on Internet use and sociability. The first few issues of this journal in many ways may resemble more of a “reader” than a periodical as the journal moves towards a full peer review process. This issue contains an overrepresentation of articles from University of Maryland researchers, a consequence of the many projects about the Internet and sociability ongoing at that University. The data from these Maryland studies are available for secondary analysis at <http://webuse.umd.edu>, and it is our hope that these articles will stimulate rejoinders and further research.

In addition to American and Canadian researchers, articles are included from researchers from the United Kingdom, Italy, Japan, China and Hong Kong—and we expect the number of international contributors to expand substantially in future issues. This is particularly the case because of the work of Professor Jeffrey Cole and his UCLA colleagues in enlisting overseas scholars to join their World Internet Project team. These articles allow the reader to appreciate that the issues of sociability and the Internet are of interest in many countries around the world, and that the results obtained in the United States do not necessarily hold in other social settings.

Given the diversity of research scholars, methods and findings represented in this first issue, some brief background is in order. First, the articles vary widely in length; in connections to theory and relevant literature; in sampling design, question construction and field procedures; in the application of sophisticated statistical analysis—as well as in the content and depth of their conclusions. These differences represent a much greater strength than liability, because the articles in this initial issue represent a *phenomenon-centered* orientation, rather than the theory-centered or skill-centered orientation represented in most social science journals. In the case of Internet

research, even those articles that do get published are scattered across several disparate journals that rarely touch base with each other.

IT&Society integrates these different literatures in the hope of advancing the scholarly study of the Internet as its own social phenomenon. Towards that goal, we take advantage of the medium itself, in that quality research can be broadcast immediately, rather than enduring delays of months or years for minor editing—or printing, typesetting or other production matters. There is opportunity for immediate feedback: thus, in the next issue we plan to publish further review articles on sociability, based largely on the articles contained in this issue—both by leading exponents of the different sides of this issue and by “outside” experts in the appropriate fields of interest.

That next issue will also include review articles similar to those here, but focused on the relation of Internet use to *other daily activity besides social life*—TV and other media use, fitness and hobby activities, eating and sleeping, family care and time at work, among others. In that connection, prominent attention will again be paid to results from complete time-diary studies. It is hoped that researchers who have conducted diary studies in other settings, besides those covered here, will be encouraged to submit their analyses and articles for possible inclusion in that issue. The lead page of this issue provides a link describing procedures for article submission.

Subsequent issues are also planned around thematic topics that have emerged as central in speculations about the increasingly pervasive role of the Internet in society: the “digital divide,” navigational skills and usability, politics, policy and privacy issues, organizational life, international differences—as well as on the methods and measurements made to assess how the Internet is affecting society. Again, the intention is to publish a set of top quality and provocative articles in these early issues that can form the base for later and improved peer-reviewed contributions to this emerging field of scholarly study.

CONTENTS OF THIS ISSUE

All twenty articles in this issue are based on survey data collected from cross-sectional or diverse adult samples, almost all at the national level. Therefore considerable attention is paid to sampling and data collection methods, and where possible authors have been encouraged to include specifics on their question wording and instrumentation. A further unique advantage of this journal is that, where possible, we have provided web links to the actual data sets on which the articles are based (analysis can be conducted through SDA, an online statistical package). In that way, readers can verify for themselves the results that are presented. A full example of the versatility of these SDA features can be found in the appendices to the Robinson and Shanks article, or by following the tutorials at <http://webuse.umd.edu>.

The articles in this issue are grouped under three headings according to method and measures: time diaries, time estimates and social attitudes. Proceeding through each of the twenty articles in order:

Time-Diary Studies: The first set of articles all rely on time-diary data in their analyses. The time diary is perhaps the most comprehensive method of collecting behavioral data because respondents provide a complete report of all of their activity for a particular defined period, such as a week, a day or an hour. Thus, time-diary studies should offer more accurate estimates of time use and be less likely to suffer from the time “guesstimate” errors of typical survey responses.

A time diary approach allows the analyst to take advantage of the important “zero-sum” property of time, namely that if time on one activity (like the Internet) increases, time on some other activity (like TV, social life or meals) must decrease. This property extends to other aspects of time that can be measured in the diary as well, such as the social location of the activity and, most importantly for sociability, as measured by with whom the activity was done. This latter aspect includes the absence of social contact, namely time spent *alone*. Additionally, the measure of secondary activities (or multi-tasking) in the diary allows for the possibility that some people are able to accomplish more, or be busier, in the 24 hours of their day than others.

The five diary studies done here each represent important advances in diary measurement, with distinctive features and sampling approaches. Perhaps the most important advance is described in the first article by Nie and Hillygus, a new diary form that is collected by using the Internet itself. In May of 2001, researchers at the Stanford Institute for Quantitative Study of Society (SIQSS) were able to collect diary data from more than 6000 adult respondents nationally, drawn from their carefully screened, national probability-sample panel; that panel is recruited to complete a 7–15 minute survey every week in return for their being given a WebTV, a device that allows them to gain access to the Web via their ordinary TV sets. Panel members completed a diary for a random 6 of the 24 hours of the previous day. The reduced time frame allowed them to gather far more detail about the respondents’ activities than the typical diary collected by telephone or by personal interview.

Using this approach, Nie and Hillygus explore the varied ways in which the Internet affects sociability. They find that the more an individual uses the Internet at home and on weekends, the less likely they are to engage in social activities or to spend time with friends and family. These results hold both before and after controls for a large variety of background and temporal factors using advanced and comprehensive regression analyses. Their estimate is that for every hour using the Internet at home, time with family declines by 40–60 percent. They conclude that time online is largely an asocial activity that competes with, rather than complements, face-to-face social time.

The second article by the University of Maryland research team also examines national time-diary data, but collected by the more conventional telephone method; the study was designed for experimental comparison with the SIQSS study. More than 1700 respondents completed 24 hour “yesterday” diaries between 1998 and 2001, as well as answering questions about their longer term use of the Internet. In the study, respondents who reported any IT use in their diaries basically showed no difference from nonusers in their six main social activities; and when examined on a long-term basis, they reported slightly more time in these social activities. While IT users on that diary day did report more time alone in their diaries and less time with work colleagues, the reverse was found when *long-term* Internet use was examined. IT users over the long term also reported slightly more conversation as a secondary activity. In other words, using essentially the same method as Nie and Hillygus, the Maryland team came to a different conclusion: namely, one of essentially no difference in the social activities of IT users and nonusers. As the authors note, that makes the Internet different from the medium of television—which in a 1965 multinational study was found to be associated with a significant decline in social life in almost every country studied.

A different diary procedure again was employed in the subsequent article authored by a different team of University of Maryland time-use researchers. In this study, complete 168 hour weekly paper diaries were filled out personally by 800 adult respondents in middle-class dual-income families across the country. Once again, no difference was found in the social activities of those parents who reported use of the Internet or other IT during the diary week and those who didn't. Users did spend more time alone and less time with work colleagues, but that could be due to telecommuting. The strength of these data is that they allow a longer behavioral observation period than a single day, in which respondents have more time to “recover” from incidents like social obligations or Internet use. The homogeneity of the sample population provides a further strength of the study design.

The 1998 diary study conducted by Statistics Canada, in contrast, was completed by telephone, with more than 5000 respondents aged 18–64. As analyzed in Pronovost's article, respondents who reported using IT in their “yesterday” diary did report a third less social activity and half as much time with friends as those who didn't use IT—even after statistical control for demographic predictors. However, when a questionnaire item was introduced as a measure of longer-term Internet use, once again essentially no difference in social life was found between users and nonusers. In this way, the results are consistent with the Nie-Hillygus findings on the single day basis, but are more consistent with the American diary results on the longer-term basis.

The final diary study by Gershuny comes from the United Kingdom, and it takes advantage of the more sophisticated design of a panel study. In his study, “light” weekly diaries were filled out by an initial sample of more than 1500 respondents; in these light diaries, respondents only need to draw lines

across pre-set activity categories, rather than having to describe their activities in words. Gershuny was able to recontact those in the initial sample who later began to use the Internet, with those who were users in both Wave 1 and Wave 2 a year later, and with those who did not use the Internet in either wave. In none of the three groups is he able to find consistent evidence of declining social life associated with Internet use. Gershuny is further able to put the effects of the Internet in the full social context of other technological advances since WWII.

Behavior Estimate Studies: Diary studies have been shown to produce more accurate figures on different daily activities than the alternative of respondent behavioral time estimates. The respondent self-estimate method is the usual approach researchers rely on to measure time survey respondents use the Internet, work, watch TV and the like. While it is faster and far less expensive than time diaries, estimates are subject to distortion, either because of social desirability or respondent inability to make accurate estimates of where their time goes. That does not mean that the estimate produces completely inaccurate or useless numbers, and it does reflect where respondents *think* their time goes.

The next set of thirteen articles is based on respondent time estimates of various types. The most complete and targeted of these may come from the year 2000 General Social Survey (GSS), and that is the topic of these first two articles. Neustadtl and Robinson first examine trends in the 27-year GSS questions on frequency of socializing with relatives, neighbors, friends and at bars. They find no decrease in aggregate socializing since 1995, the initial year of significant Internet presence. Employing questions on Internet use from the Internet module introduced into the year 2000 GSS, they do find occasional areas of decreased socializing (e.g., with relatives and neighbors) among Internet users, but these are offset by increases in other areas (e.g., friends), so that overall little difference can be found. Much the same conclusion emerges from analyses of new GSS questions on the extent of respondents' social networks—and the extent of connection with members of these networks by personal, telephone, postal mail and organizational channels of communication. Indeed, Internet users report broader social networks than nonusers, and those who depend on email are able to keep in contact with more members of those networks—without decreasing their contact by more traditional channels of communication. In that way, the results fit into the authors' "Newtonian" model of behavior, in which "bodies in motion, stay in motion," socially at least.

The subsequent article by Robinson and Shanks focuses on the two GSS social behaviors not covered in the previous article, namely religion and sex. As might be expected, the two behaviors are negatively related to one another—and to their relation to Internet use. In general, before and after adjustment for other predictors, Internet users report more attendance at religious services than nonusers, although that does not hold for heaviest users. In contrast,

Internet users report more frequent sex, before but not after adjustment for other predictors. Indeed, after adjustment, lower sexual frequency is consistently associated with more Internet use, and that result is verified by two other multivariate regression analyses. Of particular interest is the online SDA “dummy variable” regression program, which is amply illustrated in the appendices to the main article. Here, then, is the strongest evidence in the GSS data of a decline in social life connected to Internet use.

The next four articles summarize important research results from four independent teams of scholars, most of which has been reported previously in the literature. They are collectively brought together here to provide thoughtful reviews and perspectives from these important longer-term research projects. The Kiesler et al. article reviews the 7-year program of research at the Carnegie-Mellon HomeNet project, which first described the “Internet paradox,” in which the new communication medium was associated with negative social effects. In their follow-up study, however, they concluded the opposite—especially for extraverted people and for those with more social support. As the Internet and its users have matured, people have apparently been successful in adapting the medium to their everyday needs. (Not reported in their article is the HomeNet team’s latest convergent research evidence showing that Internet users do not derive as much satisfaction or meaning from their electronic communication as from telephone or personal contact, but which is another important facet in evaluating the impact of Internet communication.)

Horrigan and Rainie, in contrast, review new national survey evidence from the Pew Center for the Internet in Everyday Life project that users *did* significantly increase their use of email for “serious” matters between 2000 and 2001. This finding held for both veteran and new users. Further evidence of this serious use is its use for financial transactions and workplace applications. As the technology is increasingly used to deepen social connections, it seems to have brought about a subtle shift in the societal norms of communication—not unlike those associated with early use of the telephone.

Wellman, Boase and Chen largely seem to echo these upbeat assessments in their various NetLab studies at the University of Toronto. Evidence from three of their recent projects seem to converge on the conclusion that the Internet largely adds to personal and telephone contact. These conclusions echo those that arose in earlier eras—as rejoinders to concerns of how industrialization and bureaucracy were dissolving community groups, thereby leaving individuals increasingly disconnected and alienated. Like Horrigan and Rainie, the Toronto researchers portray the Internet as transforming society as users use the medium to integrate their online and offline lives.

What appear to be the first and longest continuing studies to document the positive impact of the Internet come from Project Syntopia at Rutgers University. Katz and Rice describe how, starting as early as 1995, Internet users in their national samples consistently reported themselves as more

involved and socially active than nonusers. Their syntopian perspective is that the Internet allows “individuals and groups to find common interests, engage in various forms of exchange and create bonds of concern and affection that can unite them.”

World Internet Project: The next six articles are linked by their involvement in the World Internet Project (WIP), initiated at UCLA with its year 2000 national panel study in the United States. The attention generated by the early project results provoked considerable international interest—to the point that native research teams in more than ten countries have now agreed to conduct their own national surveys using the core set of UCLA questions. Results from four of these teams are presented here.

The first article by Coget, Yamauchi and Suman reviews the original UCLA data in the context of an elaborate multiple regression model generated in part by what they see as holes in the existing theoretical literature. They find no evidence in these analyses of a displacement of face-to-face relations with online relations, and some evidence of decreased loneliness as well. However, people with online friends express more loneliness than do those who do not—a new form of Internet paradox that they try to explain.

The Cole and Robinson article analyzes the same year 2000 data, but updated to include data from their year 2001 follow-up results as well. Like Coget et al., Cole and Robinson find no evidence of consistent declines in contact with household members, friends or neighbors among users or heavier Internet users in year 2001 as well as year 2000. However, they do find a significant link between usage and *lower* feelings of loneliness, alienation and other measures of negative social outlooks in both surveys. In year 2000, lower loneliness and negativity were consistently associated with increased Internet usage, suggesting a strong systematic association—even after adjustment for education, age and other predictors of negativity. However, the year 2001 results, employing a different set of attitude questions related to psychological well-being, showed lower loneliness, alienation and negativity among Internet users—but no differences between heavier and lighter users. In both years, then, Internet users expressed significantly more pro-social attitudes—a point examined further in the last two articles in the next and final section dealing with subjective measures of sociability.

Lee and Zhu reach much the same conclusion as Cole and Robinson in their analysis of common *behavior* estimate questions asked in random samples of Chinese samples. The two samples were from vastly different Chinese urban population centers, Hong Kong and Beijing-Guangzhou; but in both settings, no relation between Internet use and socializing with family or friends was found. Working from their elaborate conceptual model based on earlier American studies of computer use, the authors conclude that, “Internet users live in both the online world and the offline world, and shift back and forth between the two simultaneously.”

Liang and Wei reach the same conclusion in their analyses of data from a separate study of five different urban areas in mainland China. Indeed they find that users estimate higher usage of the telephone and being with friends than nonusers—although their results to date only involve bivariate analyses rather than regressions. Using ten new questions that they developed, they also find users to give slightly more pro-social responses than nonusers. Users estimated they spent more time with colleagues and friends after using the Internet, but less time with relatives.

Mikami reaches a similar conclusion from his multivariate analysis of national panel data in Japan, namely one of no connection between Internet use and socializing with family and friends. Using retrospective questions, however, Mikami does find Internet users estimating that they were now spending less time with family and friends.

Mandelli seems to find more positive connections between Internet use and several indicators of sociability in her Italian sample, a finding she links to theories and findings from the broad range of authors and literatures she reviews. Like most authors in this issue, she rejects the views of both techno-optimists and techno-pessimists, and she describes an adaptation to the Internet that is more evolutionary and culture-driven than instrumental. While most Italian respondents in her national sample described more sociable than nonsociable reactions to the Internet (and its potentials), some declines in religious, political, family and friendship contacts were reported. Mandelli presents her results in a set of rather intricate models and illustrations.

The final article in this second section is based on data from the original article from Nie and Erbring, which is included here as the benchmark article that generated much of the controversy of the negative association between Internet use and sociability. Their results do demonstrate how feelings of decreased social contact are more prevalent among more frequent Internet users. While these are perhaps more perceptual than behavioral reports, perceptions are important in their own right—a point elaborated on in the next section.

Sociability Attitudes: The final two articles in this issue concern the “softer” side of sociability, namely in terms of sociable attitudes. While often dismissed as less important and “fuzzier” than behavior, social scientists have learned that attitudes can often play a crucial role in predicting and explaining behavior. These “soft” questions have *hard* value, especially in predicting a respondent’s vote in an election or a decision to make a certain purchase—such as deciding to become an Internet user.

Robinson and colleagues examined the correlation between Internet use and several hundred attitude items that were included in the year 2000 GSS. Most of these correlations between Internet use and GSS attitudes are either insignificant or they become insignificant once demographic factors are taken into account. The two most important demographic factors again are education

and age, which of course are the major predictors of Internet access and use. However after adjustment for these factors, there is a clear and robust set of attitudes that do relate to Internet use. These cluster around issues related to “diversity” and tolerance, most consistently the set of items devised almost fifty years ago by Stouffer to measure political tolerance during the “McCarthy era.” These questions are in the form of asking respondents whether they would allow those with minority or less popular points of view to be expressed in communities via speeches, school teaching or books in public libraries. Internet users are found to express more open views on all these topics than nonusers. Similarly, they express more “pro-diversity” views on certain racial, gender, family, sex and other socio-political topics. However, on many of these same issues, they do not—adding another to the list of “Internet paradoxes.” On more general social issues, Internet users express more trust in people, more feelings of excitement about life and greater optimism about their financial situation.

The final article by Price and Cappella adds a more dynamic element to the studies in this issue, both because they employed a multi-wave panel design and because they studied how people reacted to each other during actual political dialogue. For the first time, this rare setting allowed national cross-section samples of Americans to exchange views with each other in political dialogue over the Internet. Preliminary results from this initial natural experiment in political democracy suggest that these online discussions fostered increased political engagement and general community participation. Controlling for initial trust and propensity to attend, the number of discussion events attended was a significant predictor of post-project social trust. The results provide distinctive support for the theoretical connection of social capital to active political participation.

To this evidence about positive social attitudes related to Internet use, one could add the positive findings from the Cole and Robinson article about Internet users being less lonely and alienated to arrive at the conclusion of more positive social outlooks associated with Internet use. At the same time there is the Coget et al. evidence of increased loneliness, once social networks are taken into account. Together with Uslaner’s findings of no connection between trust and Internet use, then, the picture is not completely one-sided for attitudes either.

OVERALL

Thus, in the twenty articles in this issue, one can find persuasive evidence that the Internet is associated with decreased social life, with enhanced social life or with no difference in social life. Three articles suggest a strong negative relation. On the other hand, two or three articles suggest a strong positive relation, and another four or five others a generally positive association. Most of the studies, however, are decidedly in the middle with no significantly lower or higher sociability among Internet users.

One of the virtues of this journal is that it provides readers with original data links to allow readers to corroborate these findings, or test their own hypotheses, with a few clicks of their mouse.