

14. GLOBAL INTERNET RESEARCH

William H. Dutton, *Oxford Internet Institute*¹

Rick B. Duque, *World Science Project*

Jeremy Hunsinger, *Center for Digital Discourse and Culture*

14.1 Introduction

Research on the social impacts of Internet technologies has garnered much attention and in some cases controversy over the past decade. Early studies sounded the alarm that the Internet was creating a nation of “net-nerds”, accelerating the decline of social involvement in modern society. Others claimed that it may be exasperating the digital divide and thus increasing global economic inequality. Studies looking at its impact on research capacity are recent and more difficult to assess, since the Internet’s rise maps the explosion of western science and engineering over the last quarter century. The issue of the ‘egg or the chicken’ come to mind when determining which one drove which first. There is consensus though that the Internet has provided substantial support to cross-national collaborations in the west by reducing the problems associated with shared work over distances. It is also argued that digital archives and online publishing have facilitated, as they have accelerated, scientific productivity and communication. Recent studies have ventured outside the west, where the Internet was born and continues to be innovated, to the developing world and the newly democratized eastern European nations. Outside the west, methodological issues of causality become more manageable just as perhaps sampling and measurement become more contested. To illustrate some of these issues and give an overview of recent findings, this session review highlights global Internet research being conducted at the Oxford Internet Institute,² the World Science Project at Louisiana State University, and the Center for Digital Discourse and Culture at Virginia Tech University.

14.2 The Social Dynamics of the Internet: The Oxford Internet Surveys and the World Internet Project ³

Survey research is a valuable method of investigating underlying patterns and trends across a large population, for example to investigate the underlying factors shaping outcomes of important socio-technical phenomena such as the rapid and widespread growth in the use of the Internet and related information and communication technologies (ICTs). This paper illustrates significant insights into these social dynamics obtained from two ongoing surveys of Internet use, the Oxford Internet Surveys (OxIS) and the World Wide Internet Project (WIP).

OxIS studies of the use and non-use of the Internet have been undertaken in 2003 and 2005⁴, entailing face-to-face interviews with a national random probability sample of over 2000 people aged 14 years and older in Britain (excluding Northern Ireland). The WIP was founded in the US in 1999 by the USC Annenberg School Center for the Digital Future (formerly the UCLA Center for Communication Policy) and its growing membership currently covers over twenty partners in countries and regions across the world.⁵ In each member country, WIP researchers (such as OxIS in Britain) conduct sample surveys of Internet use, including questions common to all members as well as ones unique to each country's own survey.

Such surveys of the social implications of Internet use have been feasible only since the late 1990s, by when the global network and related ICTs had become available to a sufficiently large and diverse proportion of the general public for meaningful data on its actual use and impact to be gathered. This paper highlights four key factors in the social dynamics of Internet use revealed in analyses of OxIS and WIP data: reconfiguring access⁶; reinforcing socioeconomic divides; digital choices and divides in patterns of use; and how cybertrust illustrates why policy making could be assisted by understanding the Internet as an 'experience technology'.

Reconfiguring Access

OxIS and WIP findings generally undermine overly simplistic and deterministic accounts of the Internet's impacts on everyday life, which have been typified by Utopian visions that see nothing but good coming from the spread of the technology versus dystopian nightmares of the technology reinforcing oppressive regimes. Instead, the surveys highlight complex patterns of use and impact shaped by individual motivations and choices within the constraints of available social and economic resources. Rather

than systematically leading to predetermined impacts on social activities, this shows that the Internet can enable its users to reinforce or transform existing patterns of information and communication behaviour by 'reconfiguring access' in the ways people get information, what and who they know and stay in touch with, what services and products they consume and when and where they acquire and consume them.

For instance, the Internet is reconfiguring how people get access to information. OxiS 2005 found that at least about a quarter of its respondents would first look for information on the Internet in a number of diverse areas (e.g. 44% to plan a journey or holiday; 34% to find out about a book they had heard about; and 24% to learn about local schools). The Internet is also reconfiguring what information people gain access to. For instance, about 20% access newspapers or news services online that they do not read in print forms. It also creates new sources of information, as many respondents say they actively provide information online (e.g. 18% posted pictures/photos; 16% engaged in online discussion forums; 14% had a website; and 5% kept a blog). And reconfiguration moves beyond information, to reconfiguring how people communicate, and whom they know. About 20% of respondents had met people or made friends online. WIP findings indicate variation between countries in how far such online friendships lead to a personal meeting, indicating the significance of social contexts in shaping outcomes (e.g. in urban China an average of 7.7 friends met online are never met in person, compared with 2.6 in the USA and only 1.1 in Japan; the equivalent figures for online friends met in person are closer: 2.0 in China, 0.8 in USA and 0.6 in Japan). However, surveys in each nation show that people meet new friends online and that these online meetings lead some people to meet in real life.

Reinforcing Socioeconomic Divides through Digital Divides

The degree to which access to the Internet reinforces socioeconomic divides has become one of the central issues around Internet diffusion. The main digital divide has generally been perceived to be between those with and without access to the Internet (e.g. according to WIP circa 2003, Internet access was available to over 60% of the population in the USA, Sweden and Korea but to less than 25% in Taiwan and Hungary). OxiS data indicates only a 3% increase between 2003 and 2005 in Internet use in Britain to about 60%, matched by a 3% fall to 32% of non-users and a 2% rise to 8% in lapsed users; suggesting that diffusion has reached a plateau. Growth is principally coming in broadband access (up to 59% from 19% of Internet users in 2003). Cyber-optimists have argued that differences will diminish and even disappear as the Internet disperses more widely. Cyber-pessimists

pose a darker unfolding in which non-users or limited users are likely to be those who are already disadvantaged economically and socially, such as low income groups.

WIP and OxIS figures show widespread increases in the availability of the Internet and related ICTs, thereby opening at least potential access to more and more people around the world. However, social research has highlighted the persistence of divides, as in the plateau in diffusion within Britain, and the degree that existing divides are related to socioeconomic status, such as measures of occupation, income, and education. WIP and OxIS have therefore examined the influences of such wider socioeconomic variables. For instance, across the world the highest economic quartile generally makes far greater use of the Internet than the lowest quartile (e.g. with lower:higher quartile ratios among those using the Internet of 49%:93% in Sweden; 24:81 in Britain; 28:63 in Germany; 22:55 in Singapore; and 2:24 in Hungary).

Digital Choices and Divides in Patterns of Internet Use

Both cyber-optimists and cyber-pessimists assume that all people would benefit from the Internet, and that the prime reasons for not going online are a lack of access to the technology itself or to adequate technical skills and/or financial resources. Yet, some people may also make a 'digital choice' not to use the Internet even if they have the access and resources to do so if they do not see how such use would be of benefit in their lives. This does not represent the kind of social problem indicated by the 'digital divides' concept.

For example, there are wide variations in use of the Internet by different age groups that cannot be explained by geographical or economic barriers central to concerns over the digital divide. For instance, in households with access to the Internet there can still be a divide by age in Internet use, with older people often deciding not to use the Internet for a variety of reasons (e.g. according to OxIS, in 2005 about two-thirds of over 65s in Britain are 'not at all' or 'not very' interested in the Internet compared to just 7% among 14-17 year olds and 21% among thus aged 18-34). Although OxIS has also found increases in use among the over 55s between 2003 and 2005, significant differences remain in uses and perceptions of the Internet at different life stages. In WIP surveys circa 2003, 80% and over of 16-24 year olds were using the Internet in the USA, Korea, Japan and Britain, but use among 55-64 year olds were more typically below 40%, with wide variations within countries (e.g. 95% in the younger groups and only 12% for the older

group in Korea, with equivalent figures of 70%:12% in Spain and 66%:9% in Italy).

OxIS 2005 results indicate the older group is catching up in Internet use, but also provide evidence of the ways different groups with access to the technology make different digital choices about what to do online. For example: people under 24 tend to do multiple tasks in an online session (multitask) much more frequently than those over 45; significantly more users over 65 would first look for information about a Member of Parliament in a book or directory rather than first turning to the Internet; and use of the Internet for entertainment drops steeply as the age profile increases.

Other significant factors in making digital choices identified by OxIS include gender (e.g. males being significantly higher entertainment users than females) and income and self-rated Internet expertise (e.g. with the wealthiest and most expert being the most active groups in using the Internet in information-related activities). The wide range of uses investigated by OxIS also indicates how, once users have access, they make numerous different choices about what to do online. The most frequent uses (over 75% of users in 2005) were, in ascending order: making travel plans; looking up facts; surfing/browsing; getting product information; and checking email. Gambling, religious sites and investment stocks and funds (at 10% or under) were the least popular among the uses about which questions were asked.

What Cybertrust Reveals about the Internet as an Experience Technology

‘Cybertrust’ in the Internet and related ICTs could be critical to shaping a person’s decision to go online and what they do when they are there. In turn, users’ experiences on the Internet might raise or lower their level of ‘cybertrust’. The OxIS survey reveals wide variations in cybertrust between individuals in Britain. Few exhibit a blind faith in the Internet and all that it offers, but most people are reasonably confident, if guarded, in the information and people they are able to access over the Internet. However, the general continuing growth patterns in Internet use, as shown in WIP and OxIS surveys, suggests there is sufficient trust to support the technology’s continued diffusion, despite a general awareness of the risks entailed in exposure to unwanted mail, viruses and other potential hazards. At the same time, OxIS research shows that Internet users in Britain are not more trusting in the Internet simply because they are more trusting of all institutions (e.g. users are no more confident in other media than are either non-users or past users).

One of the most significant new understandings gained from OxIS is the degree to which the Internet is an ‘experience technology’, with uses and

perceptions greatly influenced by actual online experiences. This interpretation arose in our study of cybertrust. Those exposed to the Internet tend to gain more trust in the technology, with even past users ('Internet dropouts') having more confidence in the Internet than non-users who have no experience with it, as reflected in WIP findings that more experienced users make more online purchases. Most predispositions to cybertrust that are associated with social and demographic characteristics tend to be mitigated over time and can be accounted for by the lessons learned from experience online. However, individuals with more formal education also tend to be somewhat more skeptical of the information and people accessible on the Internet, but also somewhat less concerned over the risks entailed with Internet use.

Conclusion: Understanding the Dynamics Shaping Digital Choices

The OxIS and WIP surveys outlined here provide some strong indicators of the main factors shaping the reasons why access to an appropriate ICT infrastructure does not necessarily mean Internet use will be taken up, even by some with meaningful access to the technology. It also helps to map the complex mix of socioeconomic factors influencing the digital choices made by people once they have become Internet users, particularly the important influence of actual use in building confidence and motivation for further uses. Policy makers could therefore usefully focus on influencing digital choices as well as closing digital divides.

This would require understanding and addressing the challenges involved in encouraging resistant groups to choose whether or not to go online, including prioritizing the capabilities and services most likely to motivate people to use the Internet, given the Internet's experience technology characteristics. However, as exposure to the Internet (like education, the other key factor in boosting cybertrust) is skewed towards higher socioeconomic groups, these strategies should take account of the need to avoid reinforcing socioeconomic and digital divides.

14.3 Internet Golpe in Chile⁷

This is a study of the relationship between scientific communication and productivity in Chilean science, focusing on the role of Internet adoption and use. The World Science Project's prior work in Africa has identified a "collaboration paradox" in the developing world: in resource-poor contexts,

the high costs of collaboration may be greater than their benefits in terms of output.⁸ While the Internet has been promoted as a technology that will change this relationship, our recent findings in Africa contradict this notion. However, it is not known whether this results from conditions peculiar to sub-Saharan Africa or is true more generally. In this paper, we present results from a recent research trip to Chile to conduct a video-graphic study of the scientific community there and the role the Internet may or may not be playing. The study is framed by a 1964 US Defense Department funded study, Project Camelot, an ambitious sociological investigation conceived to study the entire Chilean society to measure the capacity of people for revolution. This project failed to get authorization from the Chilean government, did not acquire solid collaborative links with local scholars and was subsequently terminated. Many charge, though, "results were achieved by other means" including CIA sponsored dissertations and peace corp volunteers. Given the socio-political upheaval that occurred in Chile less than a decade later, the scholarly world recognized the sensitive nature of projects from abroad conducting social research within less developed regions.⁹ Our experience studying the Chilean scientific community is informed by the legacy of both Project Camelot and the Chilean dictatorship that followed.

Chile is an interesting case, since for most of its history it has had strong contact with the north. One local scholar punctuated, "Everything in Chile comes from abroad". Its scientific community, though like many in the developing world, has been characterized as being isolated and having low productivity. The 1973 military overthrow, often referred to by locals as simply "El Golpe", may have exasperated these limitations. This may be due to the following factors: resource deficiencies in the years following the Golpe; loss of international collaboration, resulting from the world's displeasure over the military takeover; whole disciplines and research programs that posed a threat to the new regime removed from University rosters; and the partial Diaspora of its scientific community who were either forced into exile or left for better funding opportunities and prestige in the exterior. The Internet is a development project from abroad, much like democracy and neo-liberalism, which many hope will elevate the Chilean scientific community as it continues to reconstruct since the end of the Pinochet dictatorship in 1989. Because Chile is a regional leader in economic performance and Internet access and use, it is assumed that this cyber-optimistic relationship will hold true. The World Science Project empirically investigates whether or not this assumption holds. The following reviews our video-graphic study's sample, methodology, analysis and preliminary findings.

In the Field with Digital Video: Preliminary Findings

The project collaborated with three Chilean scholars located at the Universidad de Los Lagos in Puerto Montt, the Universidad de Concepcion, and the Universidad Catolica in Santiago. These scholars were instrumental in scheduling 28 digital video interviews with university researchers in three regions during June 2004. The subjects represented both natural and social sciences and included six female researchers. Their ages ranged from mid twenties to early seventies. The oldest had received his professional degree in the late 1950's. The youngest was completing his professional degree at the time of the interview. The videotaped interviews were semi structured and focused on four major areas of a respondent's career: (1) professional antecedents, (2) present projects, (3) managing professional networks, and (4) their Internet history and practice.

The preliminary analysis of the video interviews have distinguished three key thematic categories: Career Paths: the legacy of dictatorship on professional careers and the importance of training abroad; Science Practices and Institutional Pressures: the obstacles of transnational collaborations and the impact of needing to publish in ISI high impact journals; and the Internet in Professional Lives: in managing professional networks, its benefits to research practices and outcomes, and its use in teaching.

Career Paths

A major theme in many of the interviews revolved around the legacy of dictatorship. Some scholars had been displaced as a result of the 1973 Golpe. They found their departments or institutes closed for an indeterminate time and either were demoted or fired.¹⁰ One researcher was imprisoned for up to eight months by the military junta. Others were exiled or emigrated to research centers and universities abroad in other Latin American nations, the United States, the UK and Canada. Some who stayed reinvented themselves in the private sector. One actually became a beef speculator for many years, before returning to academia in his later life. For those who found opportunities abroad, their career paths took a dramatic turn. Many pursued advanced degrees and found work in universities abroad or in multi-lateral organizations like the United Nations. For the ones who joined the UN, the work took them as far as Africa and as close to home as Central America. They mentioned that their training (for example in public administration or marine biology) in the developing context prepared them well for a career in the multi-lateral development sector. When asked if these unique opportunities in academic and career advancement abroad made up for the tragedy of leaving their homelands, no one offered an affirmative answer.

They appreciated the experiences, but could not say if it was for the better or not.

The researchers I interviewed by definition did eventually find their way back to Chile to continue their careers. All had kept up contact with colleagues and family in Chile while abroad. All would make short visits to measure the situation in the country. A couple returned during the dictatorship, but then left after not being able to find steady work. But it was not until after the 1989 national plebiscite ending 17 years of dictatorship that they considered moving back for good. On return, many found the research sector had dramatically changed. Using existing contacts, most of the subjects found positions in various departments. Many reported that their international experience was a formidable calling card. Now privatized, the quickly expanding Chilean research sector provided ready employment as well.

The importance of training abroad is highlighted by the experiences of those who emigrated after the 1973 Golpe, but it is just as important in understanding the Chilean context for those who were trained over the last two decades. Chile has traditionally offered few doctoral degree programs.¹¹ As a result, the road to academic advancement is often through institutions abroad. With very little exception, most of the researchers I interviewed sought additional training in universities located in other Latin American nations, Europe, Canada and the United States. The importance of these experiences is both professional and intellectual. Professionally, training abroad raises career profiles on return to Chile. Intellectually, training abroad increases the exposure to literature and techniques that are in limited supply locally. As one scholar mentioned, "After my first degree, I had learned about all I was going to learn in this area locally. If I wanted to increase my understanding of my discipline, I needed to go abroad."

Most also mentioned the financial limitations of advanced training. Although the recently trained scholars have enjoyed new local sources for funding, traditional sources were exclusively found abroad. Though most sought funds in the exterior, a few were supported by the Pinochet administration through Presidential Scholarships. Having completed a doctoral degree in Spain during the 1980s, one female subject eagerly admitted, "I am a Pinochet baby". For many, though, the resources available abroad do not always cover all expenses. Some maintained their salaries at their home universities throughout their study in the exterior. Those who did stay on salary say that it was the institutional obligation, which motivated their return. But even those who did not have legal obligations say it was the moral obligation to return and help build local capacity. Also, some mentioned that family consideration brought them home, even though in many instances career opportunities abroad were much more lucrative.

Science Practices and Institutional Pressures

Another recurring theme was the importance of projects with collaborators abroad. This was especially emphasized in the natural sciences since their orientation tended to focus on global relevance. The ability to share expertise and in some instances materials and funding makes these collaborations very attractive. Chile has enjoyed much attention from research institutes in the exterior especially in environmental sciences and astronomy. Institutes from Europe (Italy, Belgium, and Germany) have originated local bases with in which many Chilean researchers have found training and career advancement. The 1973 Golpe severely reduced this kind of international collaboration. The end of dictatorship though marked the return of global partners in research. Recently, the main obstacle of transnational collaboration is the Chilean funding structure. Some researchers complained that its restrictive nature, basing funding on results, makes sharing monetary resources with collaborators in the exterior complicated. The experimental spirit of Chilean funding though, indicates that in the near future these kinds of limitations may be ironed out.

On an individual basis, the institutional requirement of publishing in ISI high impact journals for career advancement was a major pre-occupation. Many complained that there were few local or Latin American journals on this list. While others argued most of these kinds of journals are published in English only. This brought up two issues. One was the relevance of publishing in English, when local colleagues cannot read your work due to either limited subscription resources or lack of English proficiency. The other was the pressure away from local orientations of research to those that were “trendy” in the exterior. One social scientist admitted though that this ISI requirement at his university is flexible for some disciplines that are at a disadvantage such as the social sciences. Another poignantly reminded me that for the past decade he and his colleagues were so busy reconstructing their department after 20 years absence that conducting original research and publishing was simply not a priority in the last decade. Now that institutional structures have somewhat recovered, this researcher suggested that he can focus on intellectual advancement in the form of attending conferences, grant proposal writing and submitting papers for publication.

The Internet in Professional Lives

All the researchers I interviewed had personal computers in their offices. All had had some experience with computers in their training and either had first used the Internet while studying abroad, or had adopted its use quickly after the technology had arrived within the Chilean research community en masse, about 1995.¹² All had access to the Internet with a fast connection. All

spoke of the importance of the technology in their work, especially in identifying and retrieving up-to-date information in their field. One researcher admitted, "You do not exist unless you are on the Internet." Another exclaimed, "Extraordinary... truly extraordinary!" A few of the older scholars regretted that they did not have access to this technology 30 years earlier. One researcher even mentioned that during the tumultuous 1970s in Latin America he and other colleagues had much of their work (life's work) confiscated during the military take over of university campuses. The Internet, he mused, would have been helpful in backing up documents.

While the access, streamlining, and duplication of information attributes of the Internet are important to account for, what I was most interested in understanding was how the professional networks of this group of researchers were being shaped. Although one scholar mentioned that after the 1973 Golpe, email would have facilitating maintaining contact with exiled colleagues, it was unclear whether the Internet was resulting in something different from before. Most relevant to my study was whether contemporary Internet use diverted networks outward toward the exterior. The quantitative phase of the study hopes to address this issue directly, but my digital video interviews were helpful in identifying the context of how this process might unfold. For example, my first interview with a Marine Zoologist suggested the functional equivalence nature of research and Internet technologies. Back in the 1960's, this researcher managed his professional networks "the old fashion way" with pencil, paper, typewriter and postal stamps. Instead of the digital archives, he had volumes of abstracts in his field catalogued at his university library, which listed the major scholars abroad. He routinely wrote to these scholars asking specific questions about their research and inquired about opportunities to collaborate with them. To his initial surprise, these world renown scholars answered back and soon he was invited to go abroad to continue his education and share with his global discipline the work he was doing in Chile.

When the Internet was introduced, this veteran scholar simply translated to digital the same kinds of information searches and communications networking he had done in the pre-digital era. He admitted, "It is a wonderful tool that makes the duration between contacts shorter and information instantaneous", but he also cautioned about the overwhelming amount of irrelevant information on the net. He added that as a result of the Internet, the journal submission process has been saturated and that the craft of writing and drawing (a once important requirement in his field) were slowly fading in the digital age. Although early in his career, he had made substantial contacts in the exterior, this scholar returned to Chile in the mid-

1970s and never went abroad again. Some of the contacts he had made came to visit and engage him in collaboration. But over time, his main contacts became local. In this case, this scholar was successful searching abroad for contacts before the Internet. The nature of his field and the local limitations demanded it. But after the Internet, his main digital objective was information searches. This leads me to consider that whether the Internet magnifies the networking process in the present might also be a function of particular fields and the local resource limitations researchers encounter today.

For the younger researchers who had studied abroad, Internet communication allowed them to maintain contact with key people and maintain access to the archive resources they enjoyed in the exterior. One scholar admitted that he frequently relied upon a colleague in the exterior to email him journals articles he could not acquire locally for lack of institutional resources. Another added that the ability to “google” a researcher and his website and either contact them directly or download posted works, was an exceptional advantage of this technology. Both these examples from the developing world also reveal that very often the Internet is being used to circumvent international intellectual property rights.

The Internet’s positive impact on research practices was also highlighted in the conduct of professional lives and as a tool for research. Many echoed the obvious benefits mentioned above, the Internet’s ability to circumvent local archives limitations and global knowledge access restrictions. In addition, they mentioned how convenient it was to share information with fellow scholars, register for conferences (local and international), submit journal articles electronically, and even the ability to contribute to ones field as a reviewer for a foreign journal. The latter case highlighted a latent consequence of acquiring a digital presence. One scholar said that he had been approached digitally by a foreign editor he had never personally met. The scholar imagined his mentor abroad may have suggested his name, or the editor may have read a publication of his and thought him an able candidate to be a reviewer. The Internet, in effect, had elevated this scholar to a global status without his former knowledge.

One of the interview subjects had even employed the Internet as a methodology. An exiled scholar during the Pinochet years, he became interested in immigration patterns of professionals. When he returned to Chile in the early 1990’s, he was interested in learning what had happened to other professional like himself after the 1973 Golpe. He admitted that the chance of getting funding to travel all over the world to interview exiled professionals, within the Chilean funding environment of the mid 1990s, was remote. His field, sociology, was just reintroducing itself as a discipline.

National research funds were limited even for high profile disciplines, let alone his. So he “had to turn to the Internet.” At first, he searched online list-serves of Chilean professionals abroad. He joined chat groups and documented these interchanges. He exposed himself to a few chat rooms as a researcher and was able to conduct at-length digital interviews about the experiences of these professional in the exterior. From these interviews and with collaboration from his university’s computer science department, he was able to construct a general online questionnaire; and from the list-serves of professionals he had identified earlier in the investigation, he drew his sample. Over 400 Chilean professionals in 40 different nations completed the immigration survey he made available for a one month period on line. He later experimented with chat versus email qualitative interview techniques with a sub sample from earlier studies. He concluded that chat was by far more effective in recreating the intimacy of a face-to-face interview. Eventually, he added content analysis of online newspapers and websites to his ‘Internet as methodology’ toolbox. He is even considering adding ‘webcam’ to his chat sessions to deepen the experience. He concluded that for the social scientists in a developing nation, the Internet can be extraordinary because of its affordable cost and extensive reach.

This example above illustrates the transforming potential of the Internet in addressing global science asymmetries. A researcher in the United States for example exists within a research funding environment that could have supported an immigration study of exiled professionals abroad. Yet perhaps because the United States has not experienced an exiled Diaspora like that experienced in many developing nations over the past half century, this would not be a relevant question to ask. Paradoxically, this research question is relevant in the developing context, yet the resources are rarely available. In the case above, the Internet, as a cost effective methodological tool with global reach, closed the funding gap for this particular researcher. To lend perspective to this example of successfully employing Internet technologies in research, it is helpful to acknowledge that Chile enjoys a well-developed digital network that is supported by the greater society. It also helps that the population that this scholar was investigating was made up of professionals with advanced communication and information skills that lived in developed nations with superior Internet infrastructures. The same researcher in say Burundi, for example, interested in Burundian refugees across Africa, may not enjoy the same success. Developmental context matters here.

To a lesser extent, some researchers mentioned the impacts on teaching as well. One benefit was the Internet’s vast resource of material (images and texts) that augmented lecture presentations. Some also mentioned the benefits for students: to retrieve information for class projects. But this was balanced by the apprehension that this technology may facilitate plagiarism.

Generally, the Internet was of great assistance to this group of Chilean scholars. But many of them also admitted the liabilities of this technology that included too much information, relatively little Spanish language content, and the security risk of being connected. As one scholar pragmatically suggested, "The Internet magnifies the ongoing struggle between security and freedom that frames much of the world's concerns today." Another concern was too much dependence on the technology. A scholar who had worked for the majority of his professional life in the pre-Internet era mentioned, "When the net is down, the halls get filled with researchers that do not know what to do anymore." Fortunately, this occurred infrequently; yet it does foreshadow the potential risk of dependence to a technology like the Internet that is characterized by a fast paced innovative environment and generational interface glitches. Keeping up with upgrades and mutating digital threats is a major concern in resource poor regions.

Conclusion

This study of the Chilean scientific community and the Internet employed video-ethnographic methods. We were able to engage local scholars to adopt and facilitate the project in order to address some of the ethical issues mentioned in the literature. Twenty-eight researchers were video interviewed across both social and natural sciences in university departments located in three regions. Our preliminary findings highlight a variety of issues: the legacy of dictatorship on career paths, the obstacles for international collaborations, the pressure to publish in ISI high impact journals, and the impact of the Internet on professional lives and research practices. For researchers trained in the pre-digital era, the Internet functionally replaces the past technological modes used to conduct information searches and manage networks. One key advantage for those trained in the pre and post digital eras is the Internet's ability to circumvent local resource limitations and global publication restrictions. The Internet also increases the visibility of this group of scholars as it perhaps makes them dependent on it as well. In one case though, the Internet allowed a local scholar to carry out an immigration study surveying over 400 Chilean professional expatriates across 40 different nations. This may have not been possible otherwise in a developing nation like Chile with little research funds to offer a study of this global scope. A quantitative face-top-face survey of over 300 Chilean researchers follows this video ethnography, results of which are forthcoming. We hope that our observations and conclusions further the understanding of how the Internet may shape

knowledge production in the developing world. Meanwhile, our project continues to consider the ethics of our presence as guests for science in distant lands.

14.4 Internet Research: A View from the Association of Internet Researchers¹³

Internet research as represented by the association is a pluralistic and transdisciplinary endeavor. The members of the Association of Internet Researchers (AoIR), the attendees at its annual conferences and the broader community that uses its listserves and related resources combine people from a significant number of disciplines and variant scholarly traditions. Their combined efforts define one set of understanding of the field of Internet research. The particular pragmatics of negotiating the creation and building of a scholarly organization around Internet research and the organizations nascent ecologies have further shaped the development of the field.

Internet research is certainly broader than AoIR, though it is certainly international and interdisciplinary as indicated by the association's mission. The association's primary activities surround the coalescence of scholars of Internet research. To that end, there have been annual conferences, a research annual and several other related publications. The constitution of these conferences and materials has always involved a conscious effort to be inclusive of the broader communities of Internet research. However, it is not always possible to effectively recruit new communities, new disciplines and new interests who clearly have been doing Internet research. So it is clear that while this is a paper about who is doing Internet research from the AoIR perspective, it does not represent everyone that does Internet research.

The interdisciplinary nature of AoIR is easily seen from the constitution of its conferences and publications. The question is whether there is a new set of axiologies arising that allow people from these disciplines to understand the same object of research, or if not, is there evidence that it is development of the ability to interpret materials outside of a disciplinary perspective. The evidence of this transition is found in the composition of the conference papers by discipline and the inclusiveness of the annuals. The transition from interdisciplinarity to transdisciplinarity is slow, but during its time, AoIR has come to be a new location for legitimate scholarship, cross-disciplinary collaboration and has begun to build the community necessary to make transdisciplinary research possible.

It is not surprising that AoIR has majority of members from the discipline of communications, but that only has made about 1/2 of the membership at any given time. Many of the AoIR members come from

interdisciplinary departments such as media studies, information studies, and related fields. Internationally, the members of AoIR have been concentrated in North America, with upwards of 50% of the conference attendees being from the United States. However, as AoIR has moved conferences from places to place in Europe and Canada, the European and United Kingdom attendance has spiked, as one would expect when the structural impediments of travel and time-costs are significantly lessened. However, even with those impediments from the very first conference, AoIR has had attendees from all five continents in attendance. With members from over 120 countries, the local and national centered notions of scholarship, scholarly production, conferences and the rules of scholarly organizations vary significantly. This cross-national construction of differences opens new realms for understanding and negotiation based upon those varied understandings.

The tendency of international audiences to be primarily national or regional in emphasis should not be forgotten when one considers the size of the scholarly community surrounding Internet research. Localized notions of Internet research are found in like the General Online Research Organization, which used to be the German Online Research. Combined with other regionalizations within the cultures of the academia, the possibility for transdisciplinary collaboration can be hindered or helped based on national and international perspectives. We have to be careful not to overemphasize our own scholarly perspective when discussing Internet research, instead it is best to prioritize well grounded research, but with an eye to its public reception to diverse audiences.

To the extent that there are differences in local, national and the international arenas that cause disciplinary differences, there are also very real differences amongst those disciplines inside and outside of their national contexts. In some national organizations, such as the American Sociological Association or the American Political Science Association, there are already multiple divisions that deal with Internet research. Some divisions deal with the technological aspects, others deal with the governance aspects, and yet still others deal with the educational aspects of Internet research. These organizational sections have their own sessions and in large organizations they might not ever talk to each others. The boundary work that these organizations have as an ongoing activity at all levels stultifies disciplinary collaboration, not to mention the effects on interdisciplinary communication.

However, in AoIR we do not foster divisions and we do not differentiate strongly on disciplinary boundaries. The organization of the conferences has tended to be theme-based, with panels relating to methodologies and panels relating to topics. This division is meant to encourage cross-disciplinary discussion about methods and topics instead of disciplinary conversation

about disciplinary concerns. Whether this works or not, has yet to be seen, but we do have several interdisciplinary books coming from material presented AoIR conferences. The organizations have also helped to foster working groups and organizational subgroups around certain issues. These groups have helped found EU networks of excellence and have provided forums for other activities related to AoIR research. These groups have started to foster international interdisciplinary conversations in interesting ways and they might be the basis for further research.

One contentious issue in all conferences is the notion of 'quality'. Quality of research varies across disciplinary groups even to the point of having a single university having a research group that defines a very narrow set of methodologies as acceptable quality. The tendency toward academic specialization and methodological uniformity in disciplines creates skepticism in other arenas. To combat this, AoIR and other groups use academic peer review processes to varying degrees of success. There is yet to be found a fair balance between the labor of peer review, the specialization required to review something adequately and the number of reviews that need to be performed per individual. In short, generalist with broad backgrounds and familiarity with the audience are in significant demand for peer review, but specialists are needed to judge some of the more narrow bands of scholarship. The problems that AoIR faces in this arena are not found in more disciplinary societies that can rely on methodological specialization and disciplinary language to communicate the validity of their research. However, it is also this language and specialization that pushes most science out of the realm of public understanding. The compartmentalization of knowledge into the realm of specialization creates real problems for legitimizing disciplinary Internet research to the broader community.

Conclusion

This chapter reviewed global Internet research being conducted in institutes worldwide. The Internet is a reflexive phenomenon that is both shaping global society and research capacity as it is providing new methodological tools for understanding the Internet phenomenon itself. The Oxford Internet Institute, in conjunction with the World Internet Project at USC's Annenberg School Center for the Digital Future, represents an ambitious comparative global study of Internet access and use. Their findings suggest that we should be mindful of assuming access necessarily means use, that there are complex socio-economic factors influencing digital choices, and that building "cyber-trust" should be emphasized in policy formulations. The World Science Project at Louisiana State University maps

how the Internet is shaping research capacity in developing nations over time. Where once they were considered isolated and locally irrelevant, the Internet may be potentially elevating researchers in developed nations like Chile to a global presence. Moreover, it is allowing the circumvention of local resource limitation and international intellectual property rights law. In addition, the Internet may be creating dependency upon a technology, whose innovative nature makes it difficult for communities in the south to keep pace with. Research emerging from the Center for Digital Discourse and Culture at Virginia Tech University alludes to the complexity of scientific boundary work occurring within the emerging field of Internet Research. The field has developed from an interdisciplinary to a transdisciplinary phenomenon, creating a variety of scholarly communication challenges along both methodological and organizational dimensions. Given the complexity of the issues reviewed in this session, whether the Internet is proving to be the pathway for a symmetrical global community in terms of “cyber trust”, socio-economics or even research capacity has yet to be determined.

14.5 Notes

- 1 Authors in order of the section they contributed. The chapter was compiled and edited by Ricardo B. Duque.
- 2 Study done in conjunction with the World Internet Project at USC's Annenberg School Center for the Digital Future.
- 3 Presented by William H. Dutton, Director, Oxford Internet Institute.
- 4 See <http://www.oii.ox.ac.uk/research/> for more on OxIS, including access to publications giving more details of the results of past survey, such as W. H. Dutton, C. di Gennaro and A. M. Hargrave (2005), *The Internet in Britain: The Oxford Internet Survey, May 2005*, Oxford: Oxford Internet Institute. OxIS is sponsored by AOL, BT, Ofcom and Wanadoo.
- 5 See <http://www.worldinternetproject.net> for more on WIP.
- 6 The concept of reconfiguring access was developed in a synthesis of research on ICTs in W. H. Dutton (1999). *Society on the Line*, Oxford: Oxford University Press and in the context of broadband Internet in W. H. Dutton, S. E. Gillett, L. W. McKnight and M. Peltu (2003), 'Broadband Internet: The Power to Reconfigure Access', *Forum Discussion Paper No. 1*, Oxford: Oxford Internet Institute (available online at www.oii.ox.ac.uk/research/publications.cfm).
- 7 Presented by Ricardo B. Duque, World Science Project <http://worldsci.net>
- 8 Duque, R. B., Marcus Ynalvez, R. Sooryamoorthy, Paul Mbatia, Dan-Bright Dzorgbo, and Wesley Shrum. 2005. "Collaboration Paradox: Scientific Productivity, the Internet, and Problems of Research in Developing Areas." *Social Studies of Science* 34:1-31.
- 9 Horowitz, Irving Louis (1967) *The Rise and Fall of Project Camelot: Studies in the Relationship Between Social Science and Practical Politics*, ed. Cambridge MA: The M.I.T. Press.
- 10 For example, the discipline of sociology ceased to exist between the years of 1973 and the early 1990s.
- 11 Mullin, James and Robert M. Adam, Janet E. Halliwell, and Larry P. Milligen. 2000. *Science, Technology, and Innovation in Chile*. Ottawa, ON, Canada: International Development Research Centre.
- 12 REUNA, the Chilean IT institute, connected the university system with an intranet in 1986. It was one of the first networks in Latin America to hook up to the World Wide Web in the mid 1990s.
- 13 Presented by Jeremy Hunsinger, Center for Digital Discourse and Culture at Virginia Tech University.