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Non-Users Also Matter: The Construction of Users and Non-Users of the Internet
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On Not Driving a Car

I have never owned a car. I am, however, very well qualified, having passed two driving tests. The first took place during a snowstorm in Toronto a few months before my seventeenth birthday. I think I passed only because I successfully navigated the course without skidding. I needed two attempts when I was 25 to pass the British test, in a more complex machine with a manual transmission. I have never driven much. My parents sold their car soon after I passed my test in Toronto. I have driven only twice since I passed the British test in 1984.

I simultaneously inhabit the same world as car drivers and a different one. My life is affected by cars: as a pedestrian and a cyclist, I see them as a threat to my health and well-being, and as a user of public transport I find that they slow me down. The reach of public transportation constrains where I can live and where I can visit. My knowledge of London is very much based on public transport routes convenient to where I lived and worked. The London underground map is a better and more useful representation of my experience than a topographical one. In 1999, when I was driven from London to Amsterdam. I was fascinated, to the amusement of my driver friend, by the alien world of motorways, petrol stations, motorway services, and drive-on ferries.

Not driving is regarded by many as a deviant and bizarre choice. One of my friends thinks it reflects a failure to grow up on my part, that "real adults drive cars."[1] There are, of course, advantages to not driving—it saves money, time, and stress; it reduces one's chances of being killed or killing others; and, in these post-Rio, post-Montreal days of greater environmental awareness, it provides a tremendous feeling of self-righteousness. Occasionally, policy makers accept that non-car-users also have rights and interests which need to be taken into account in the formulation of

transport, industrial, and land-use policies. Non-car-users are increasingly rejecting the land claims made by the producers and users of cars who want to turn ever more land over to roads and parking lots. Since 1995 and the growth of protests against cars and against road building around the world, militant non-drivers are becoming more active in asserting the desirability of car-free spaces (Reclaim the Streets! 2001).[2]

I have presented this autobiographical information in order to make two analytic points regarding non-use of technology.[3] First, the existence of individuals who choose not to own a car even though they could afford to do so, raises questions about the explanations put forward for non-use. Second, and related to the first point, voluntary rejection of a technology raises the question of whether non-use of technology always and necessarily involves inequality and deprivation. In other words, is the policy assumption that all non-users of a particular technology wish to become users appropriate?

The assumption that non-use or lack of access is a deficiency to be remedied underlies much policy discussion about the Internet. For example, the meeting of European Union heads of government held in Lisbon in March 2000 was dubbed the "dot-com summit," reflecting the realization by heads of state of the importance of information and communication technology generally and the Internet in particular for the economic well-being of Europe. The aim of the summit was to discuss how to increase employment by promoting enterprise, competition, and a dynamic, knowledge-based economy. To this end, the leaders agreed to reduce the cost of Internet access to US levels within 3 years, to connect all schools to the Internet by 2001, and to train teachers in its use (Tisdall 2000). Everyone is clearly understood as a potential user of the Internet. Access to the technology is seen as necessarily desirable, and increasing access is the policy challenge to be met in order to realize the economic potential of the technology. Concern about the social inequalities that may arise if the 'digital divide' is allowed to grow was expressed by some heads of state. While such concern about social exclusion is laudable, it is nonetheless based on the assumption that Internet "haves" will be in a better socio-economic position than Internet "have-nots." As Neice (2002, 67) argues, "it is simply presumed by those advocating the elimination of the "digital divide" that having Internet access is always better than lacking it." The reasons why private companies selling Internet-related products and services wish to promote the Internet as a universal medium are self-evident; the reasons why policy makers support them are less clear.

The March 2000 European summit is only one of many examples of politicians' and policy makers' assuming that access is the problem. From that perspective, making Internet access cheaper and providing more education and training are among the obvious solutions. It is assumed that once these barriers to use are overcome, people will embrace the technology wholeheartedly. Access to the Internet is seen as necessarily good, and more as necessarily better (though, as with champagne and chocolate, moderation is advised). Politicians hope that people will use their knowledge of and from the Internet to create wealth and employment and to become active citizens, but maybe they will use it to look at pornography or play games. The most popular online activities in 2001 were e-mail and finding information about hobbies, travel, music, books, films, news, and health (Pew Internet Project 2002). Perhaps some people will not use the Internet at all, and perhaps a lack of Internet access does not have to be a source of inequality and disadvantage.[4]

The contributors to this volume are, quite rightly, keen to emphasize the importance of users in technological development. As Oudshoorn and Pinch argue in the introduction, users are not simply passive recipients of technology; they are active and important actors in shaping and negotiating meanings of technology, which is significant both for understanding design processes and the relationship between the identities of technologies and their users. Users have been neglected for too long.[5] Including them helps to overcome the problems associated with approaches to science and technology studies and innovation studies that emphasize the roles of powerful actors such as scientists, engineers, politicians, and financiers in producing technologies. But restoring the dialectic between production and consumption by establishing the importance of use and users may introduce another problem: by focusing on use, we implicitly accept the promises of technology and the capitalist relations of its production. Users are increasingly introduced into technology studies to counterbalance the emphasis on producers found in much of the literature, but all categories involve exclusions. Therefore, users should be seen in relation to another, even less visible group, that of non-users.[6]

To what extent is not driving a car analogous to not using the Internet? "Superhighway" metaphors specifically and travel metaphors generally have played an important role in discussions of the Internet. This chapter is premised on the idea that there is something to be gained from exploring the limits of such metaphors through an examination of those who choose not to travel down particular technological roads. All metaphors and analogies have limits. Perhaps it would also be valuable to

pursue the similarities between the telephone and the Internet, insofar as both are communication media. Nonetheless, I shall deploy the car analogy in this chapter because it is a better illustration of the use/non-use dichotomy. Also, both cars and the Internet have been loaded with cultural significance. The car was a paradigm case of a symbol of modernity in the twentieth century. To many people, cars reflect wealth, power, virility, and freedom. The Internet promises many of the same attributes on an even larger scale, with its possibility of global reach. The symbolic value of having Internet access is often presented as a sign of inclusion in a high-technology future.

Users of the Internet

The dramatic increase in the number of Internet hosts since the development of the World Wide Web tempts many commentators to conclude that this rate of growth will continue, or even accelerate.[7] It is assumed the Internet is following a path taken by many other successful technologies before it. Economists refer to this path as "trickle down," meaning the process whereby technologies which are initially expensive to use become cheaper, simultaneously providing more people with the benefits of the technology and enlarging the market. In the case of the Internet, the early users were a small number of academics who used computers paid for largely from university budgets or defense contracts. Academics are now in the minority as firms, governments, administrative bodies, political parties, voluntary groups, and individuals at home all use the Internet for a huge variety of applications and purposes.

According to the trickle-down view, there may be inequalities of access and use during the early stages of a technology, but these disappear, or are at least much reduced, as the technology becomes more widely diffused. Internet enthusiasts often claim that connection is a global process, albeit an uneven one. This is not unique to the Internet. Similar claims can be found in much literature and in policy statements about industrialization and modernization more generally. Individuals, regions, and nations will "catch up"; those not connected now will be or should be connected soon. This is the real annihilation of space by time: the assumption that the entire world shares a single time line of development, with some groups ahead of others but with everyone on the same path.

The evidence for the catching-up assumption, and ultimately a more even distribution of access, is furnished—at least within so-called advanced industrial societies—by time series of statistics relating to own-

ership of consumer goods such as motor vehicles, televisions, and refrigerators, all of which were once owned by very small percentages of households but are now much more widely diffused. Globally, however, the catching-up effect is less obvious, and measurement of ownership of consumer goods per se says nothing about inequalities in the type and quality of goods possessed. Moreover, the economic prosperity enjoyed in OECD countries during the 1960s and the early 1970s is not likely to be replicated.

Collecting and interpreting data about Internet use is not straightforward. Defining a host, ascertaining its location, and identifying users and their demographic characteristics are all fraught with difficulty. Jordan (2001) demonstrates how estimates of the size and growth of the Internet are often motivated by commercial needs and are not well informed by reliable sampling methods. Although I am critical of the data, some are presented below both because such data have had practical significance in policy discussions and because, despite the limitations, some patterns can be discerned.

Graphs with numbers of hosts, connections, or users along the vertical axis and with time along the horizontal axis often illustrate news reports and policy documents about the growth of the Internet which forecast exponential growth, even though the rate of growth has been quite stable over a long period. Despite the growth, differences between countries remain stark. In mid 1998, industrialized countries—with less than 15 percent of the world's population—accounted for more than 88 percent of Internet users. The United States, with less than 5 percent of the world's people, had more than one-fourth of the world's Internet users (UNDP 1999). This picture has worsened slightly, according to 2002 data available from Nua.[8] Even within the European Union there is a divide. In the Scandinavian countries and the Netherlands more than one-half of households have home Internet access, whereas in Spain and France less than one-fourth of households do (Altevie 2001). Global and regional digital divides remain.

The stereotypical user remains a young, white, university-educated man. However, closer examination of the available data indicates some weakening of this stereotype, at least in the United States. Gender differences have shown the most dramatic reduction since the development of the World Wide Web. Georgia Technical University has been conducting online surveys of Internet users approximately every 6 months since January 1994.[9] In the first survey, only 5 percent of users were women. By October 1998 (the last such survey placed in the public realm), women

represented just over one-third of users worldwide. The Pew Internet Project (2001) claims that indeed half of US Internet users are women. In Europe, over 40 percent of Internet users in Sweden and the United Kingdom are women, but in most other countries the percentage of women users is well under 40 (Nua 2002b). There are differences in patterns of use, men spending more time on line and logging on more frequently (CyberAtlas 2002a)

The size of the divide may vary between countries, reflecting national traditions of difference and exclusion, but social divisions in Internet access continue to exist. As the most advanced user of the Internet, the United States may offer some interesting lessons for the rest of the world. Manuel Castells (2001) uses US data as a paradigm case for the rest of the world. Castells examines the ways in which differences between social groups have changed and concludes that differences are narrowing, especially gender differences. Castells is optimistic about the disappearance of all digital divides, not only that based on gender but also those based on ethnicity, income, and education. But the sources he cites are less sanguine. The US Census Bureau conducted large-scale surveys (of approximately 48,000 households) on behalf of the National Telecommunications and Information Administration in 1995, 1998, 1999, and 2000. The analysis of these surveys highlights what the authors call a "persisting digital divide." They note substantial increases in Internet access, but then they state: "Nonetheless, a digital divide remains or has expanded slightly in some cases, even while Internet access and computer ownership are rising rapidly for almost all groups. For example, the August 2000 data show that noticeable divides still exist between those with different levels of income and education, different racial and ethnic groups, old and young, single and dual-parent families, and those with and without disabilities." (NTIA 2000, summary)

Non-Users of the Internet

Will the cyberworld come to dominate the physical world to anything like the same extent as cars and the associated socio-technical system? Is it possible to turn off the machine? Or will everyone's choices come to be shaped by the Internet, just as many people's transport choices are influenced by the automobile whether or not they own one? The shift of retail outlets from town centers to out-of-town shopping centers makes life more difficult for non-drivers. Similarly, will the disappearance of offline information sources limit people's ability to participate in public life?

The surveys referred to in the preceding section are all concerned to demonstrate growth, and of course growth has been impressive according to all available indicators, including the numbers of hosts, domain names, and users. Nearly all of the academic and policy literature focuses on how to increase the number of users, and takes the additional step of assuming that once a user an individual will always be a user. For example, Hoffman and Novak (1998: 9) write: "Ensure access and use will follow [and] access translates into usage." Moreover, Hoffman and Novak conclude that "programs that encourage home computer ownership . . . and the adoption of inexpensive devices that enable Internet access over the television should be aggressively pursued, especially for African Americans" (ibid.).

I shall leave aside for the moment the question of indirect use of the Internet (e.g., people making a query in a shop or agency where an employee uses the Internet to provide the information needed). Despite the huge global inequalities in Internet access referred to in the previous section, I shall focus here on the evidence for non-use in some highly industrialized countries where non-use could be a choice. There are some data available which suggest that providing access may not be the sure, simple solution it appears.[10] Cyber Dialogue, an Internet research consultancy based in the United States, has found evidence of a slowdown in Internet growth (Cyber Dialogue 2000). They claim that the rate of growth is slowing down overall and that there is evidence of an absolute decline in the number of users aged 18 to 29. In part, they attribute non-use to cost: some people cannot afford a computer and Internet access. They also claim that approximately one-third of all US adults simply do not believe they need the Internet and what it offers.[11] Even more significant is the growth in the number of adults who have tried the Internet and then stopped using it, only one-third of whom expected they might use it again at some point in the future. In early 1997, Cyber Dialogue estimated there were 9.4 million former users; by September 1999, they calculate that there are as many as 27.7 million former users. In 2001, the Pew Internet Project found that half of all the adults in the United States do not have Internet access and 57 percent of those non-users are not interested in getting it (Pew Internet Project 2001). A survey conducted in the United Kingdom in 2000 found that one-third of British adults has no intention of ever using the Internet (Ward 2000).

Based on two national random telephone surveys conducted in the United States, James Katz and Philip Aspden (1998) suggest there are patterns to Internet non-use. Their analysis of "Internet dropouts" was a side

effect of some research about barriers to Internet use in the United States. They candidly admit they included the category of "former user" in their surveys only for logical completeness. They were surprised to discover in October 1995 that former users and current users each accounted for about 8 percent of the sample. They did another survey in November 1996, by which time the proportion of current users had more than doubled to 19 percent of the sample. The proportion of former users had also increased, but only to 11 percent. People who stop using the Internet are poorer and less well-educated. People who are introduced to the Internet by family and friends are more likely to "drop out" than those who are self-taught or those who receive formal training at work or school. Teenagers are more likely to give up than people over 20. The reasons for "dropping out" vary by age. Older people are more likely to complain about costs and difficulties of usage; younger people are more likely to quit because of loss of access or lack of interest. Katz and Aspden (1998) draw attention to this important category of non-users, though their explanation for non-use remains very functionalist, focusing on issues of cost and access. Their use of the term "drop out" is rather pejorative, suggesting again that use is to be preferred to non-use. As Ronald Kline argues in this volume, viewing resistance to technology from a functionalist perspective reinforces the promoters' interpretations of success. In his analysis of resistance to the telephone and electrification in the United States at the beginning of the twentieth century, Kline defines resistance in the terms of contemporaneous actors and demonstrates how resistance itself can induce socio-technical change.

The Cyber Dialogue data and the results of Katz and Aspden need to be treated with caution as former users can, of course, become active users again at a later date. Nonetheless, they are interesting because they call into question the assumption of never-ending growth. They also suggest that public access provision, quality of information and training remain important policy issues. If the results about teenagers are replicated elsewhere on a large scale, certain assumptions about the rate of exponential growth have to be re-examined. Turkle (1995) draws on Erikson's theories of adolescent identity development to explain some of her observations of the behavior of young people in multi-user domains (MUDs).[12] She suggests that MUDs provide a safe environment in which adolescents and young adults can experiment with different forms of interaction and relationships. Maybe the Internet is one of many things with which teenagers experiment only to abandon or use in moderation as they become older.

Other new technologies indicate patterns of use and non-use. Leung and Wei (1999) examine the use and non-use of mobile phones in Hong Kong. Mobile phones have a much longer history than the Internet as a consumer technology. Leung and Wei identify the factors that are important in determining the take-up of mobile telephony, although they do not distinguish between those people who have never used a mobile phone and those who have stopped using them. Age, income, gender, and education all work in expected ways. However, age dominates—if one is older (unspecified), having more money and more education does not make much difference. Income levels are declining in significance, thus providing some support for the effectiveness of "trickle down." Intensity of use of mass media is not significant, but belonging to social groups that use mobile phones is. Equally unsurprising is the finding that non-users perceive the technology to be unnecessary because they have an alternative or because they find mobile phones either complex to choose and use or intrusive. Leung and Wei's results confirm a growing gap between the communication rich and the communication poor, with users of mobile phones more likely to possess a range of alternative and complementary forms of telecommunication (pagers, answering machines, etc.), whereas non-users had only one reasonable alternative. Leung and Wei accept the premise that having multiple communication devices is intrinsically good, whereas having only one adequate communication device is a sign of deprivation.

Leung and Wei's results are not very surprising: people do not use mobile phones if they have alternatives, find them intrusive, and/or think them expensive. By extension, maybe some people decline to use the Internet because they have alternative sources of information and forms of communication that are appropriate to their needs, or because they think it is cumbersome and expensive.

Re-Constructing the Categories of Use and Non-Use

The question of "dropouts" may be a transient issue if all the non-users given that label eventually return to the Internet, perhaps when their income rises or when they regain access by means of a television or a mobile phone. In any event, in the United States alone there are millions of former users about whom very little is known. They may be a source of important information for subsequent developments. Even within the rhetoric of increasing access, it is important to know why such people leave and whether anything should be done to lure them back. Internet

service and content providers as well as policy makers might have much to learn from this group.

There are different categories of non-use. As Bauer (1995: 14–15) points out, there is a difference between passive "avoidance behavior" and active resistance. Also, care should be taken to distinguish between non-use of a technological system (such as the Internet) as a whole and non-use of specific aspects of it (Miles and Thomas 1995: 256–257). In a preliminary taxonomy of non-use, we (Wyatt, Thomas, and Terranova 2002: 36) identify four types of non-users. The first group consists of "resisters" who have never used the Internet because they do not want to. The second group consists of "rejecters" who have stopped using the Internet voluntarily, perhaps because they find it boring or expensive or because they have perfectly adequate alternative sources of information and communication. The third group consists of people who have never used the Internet because they cannot get access for a variety of reasons; they can be considered socially and technically "excluded." The fourth group consists of people who have effectively been "expelled" from the Internet; they have stopped using it involuntarily, either because of cost or because they have lost institutional access.

The policy implications are different for the different groups. It might be appropriate to develop new services in order to attract the resisters and the rejecters. If Internet access is seen as inherently desirable, this might be accompanied by the provision of measures to facilitate access. Another possibility is to accept that some people will never use the Internet. This could lead either to a focus on existing users or (moving away from the perspective of the suppliers and promoters who see non-use only as a gap to be filled) to policies that would make alternatives to the Internet available to people who want or need them. The access issues identified at the European Union meeting in March 1999 related to cost, skill, and location are more relevant for the third and fourth groups (the excluded and the expelled who would like access). At the very least, it is important to distinguish between "have nots" (the excluded and the expelled) and "want nots" (the resisters and the rejecters).

Once one has made the step of including "former user," as well as "current user" and "never a user," it is not too much more of a leap to begin to take apart the notion of "user." What exactly does it mean to be a user? How is it defined? Is it possible to distinguish between non-users and non-owners? In a well-established UK survey conducted by the NOP Research Group (1999), estimates for total numbers of users are based on answers to the question "Have you personally used the Internet in the last twelve

months?" This allows for an enormous range in frequency of use. The notion of Internet usage should be treated in a rather more nuanced way, distinguishing between those who spend almost every waking hour online and those who check their e-mail once a week. The CyberAtlas data now distinguishes between those with access to the Internet and those who actually use it at least once a month. In 2002, it was estimated that there were 149 million Internet users in the United States but just over two-thirds of them had used it within the past month (CyberAtlas 2002b). (I occasionally use taxis and accept lifts from friends; while this does leave me open to the accusation of hypocrisy, it does not make me a car user in any meaningful sense.) Frequency of use and the range of services used are both important to consider when conceptualizing Internet use. There remains a great deal of interpretive flexibility about what problems the Internet is solving and for which social groups.

The Internet "user" should be conceptualized along a continuum, with degrees and forms of participation that can change. Different modalities of use should be understood in terms of different types of users, but also in relation to different temporal and social trajectories. The latter include changes in lifestyle determined by processes such as aging, changing jobs, educational history, and geographical mobility. Internet use encompasses not only different types of use, but also the possibility of reversals and changes of direction in the individual and collective patterns of use. In addition to the usual demographic variables, details about the frequency and nature of use help to construct a fuller image of the multiplicity of uses and users of the Internet. Many authors have pointed to the ways in which producers and designers of technology draw on the "I-methodology," using themselves as the paradigm of a user (see the chapter by Lindsay in this volume), or the singular, undifferentiated user, or users in the plural as a homogeneous group. Including the variety of non-users also helps to open the way for subtler description and analysis of the multiplicity of users.

Incorporating Non-Use into Technology Studies

In this chapter, I have presented some of the data about use and non-use of the Internet, not in order to provide a definitive snapshot of its current level of diffusion but rather to begin to explore the category of non-use and what it means for science and technology studies. Much more research is needed to understand the variety of reasons people resist and reject technology. Analyzing users is important, but by focusing on users

and producers we run the risk of accepting a worldview in which adoption of new technology is the norm.

Cars are not simply wheels, engines, and steel; they exist within a socio-technical infrastructure that includes test centers for drivers and vehicles, motorways, garages, the petrochemical industry, drive-in movies, and out-of-town shopping centers. The more people use cars, the greater the infrastructure to support them, and the lessening of car-free space. Similarly, the Internet is not just web content. It includes many other applications as well as computers, telecommunication links, routers, servers, educators, and cyber cafés. The more people use the Internet, the more pressure there is to develop user-friendly interfaces and to provide more access equipment, greater bandwidth, and faster switching and routing. But there is a paradox here: as the network expands and becomes more useful, it may also become more difficult to create well-working communities. It is thus important to analyze the Internet not only along a single dimension or characteristic but as a large technical system (Mayntz and Hughes 1988; Summerton 1994; Coutard 1999). In this chapter, I have argued that it is essential to consider the role of non-users in the development of large technical systems such as the Internet rather than focusing only on the changing relationships between system builders and users.

Acknowledging the existence of non-users accentuates certain methodological problems for analyzing socio-technical change. At the beginning of the chapter, I highlighted the importance of incorporating users into technology studies as a way of avoiding the traps associated with following only the powerful actors. Another way of avoiding such traps is to take non-users and former users seriously as relevant social groups, as actors who might influence the shape of the world. Elsewhere in this volume, Jessika van Kammen explores user involvement in design and Ronald Kline analyzes the ways in which people who resisted the use of the telephone and the spread of electrification affected subsequent design choices. Maybe it is also possible to explore the possibilities for including non-users in design processes. For example, would mobile phones make such irritating noises if non-users had been involved in their design? There are obvious methodological problems to be overcome here as non-users may be particularly difficult to locate. Non-users may not be a very cohesive group as people may have very different reasons for not using the Internet. This invisible group is another instance of the difficulties posed by an over-literal interpretation of the dictum to "follow the actors."

Kline (this volume), Kline and Pinch (1996), and Bijker (1995a) have vividly demonstrated the important roles played by, respectively, resisters of the telephone and electrification in the rural United States in the early twentieth century, anti-car farmers in the US in the same period, and anti-cyclists in Europe in the late nineteenth century. Kline and Pinch explore the significance of rural inhabitants of the US, who initially opposed the use of motorcars and who even after accepting its presence used the car for a variety of agricultural purposes. Kline and Pinch demonstrate the significance of this for subsequent designs of both cars and roads. Bijker examines the ways in which anti-cycling groups influenced the design of bicycles, contributing to a safer configuration around which bicycles eventually stabilized. These and other histories of technologies demonstrate how resistance and rejection play an important shaping role; however, it seems possible to allow this only with the safety of hindsight when technologies have been stabilized and normalized.

The use of information and communication technology (or any other technology) by individuals, organizations, and nations is taken as the norm, and non-use is perceived as a sign of a deficiency to be remedied or as a need to be fulfilled. The assumption is that access to technology is necessarily desirable, and the question to be addressed is how to increase access. Sometimes the answer involves investment in infrastructure, public education to overcome ignorance and fear, or training and standardization to improve ease of use. Informed, voluntary rejection of technology is not mentioned. This invisibility reflects the continued dominance of the acceptance of the virtues of technological progress, not only among policy makers but also within the STS community.

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