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## **Internet Research Tracings: Towards Non-Reductionist Methodology**

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### **Abstract**

Internet research has become a "field" in its own right in the social sciences, already boasting a number of peer-reviewed journals, a plethora of book titles, and an international association that draws hundreds of researchers from across the globe to its annual conference. This paper contributes to this burgeoning field at a meta-methodological level by considering what is needed to achieve non-reductionist understandings of the Internet. It shows how Internet research perspectives draw upon various established media and technology research traditions. These can be grouped according to their emphasis upon three different aspects of determination influencing media technology outcomes: uses, where the instrumental use of the artifact is brought to the fore; technological, where the form of media technology is focused upon; and social, where the structuring of outcomes by social determinants is central. Consideration of the research traditions emphasizing each of these aspects gives access to previously recognized strengths and weaknesses associated with each. In particular, my critical examination highlights how each perspective can

fall into overly deterministic arguments: instrumentalist, technological determinist, and social determinist. As such, I argue that to gain non-reductionist understandings of the Internet, research ideally needs to take into account the complex interplay between multiple constituting elements. I point to a number of existing media technology approaches that can help with this task. However, I also acknowledge the limitations placed on research by resource constraints and recognize that researchers may wish to follow a particular tradition and focus on a single determination. I argue that these researchers must at least recognize the multi-dimensionality of determination, and be reflexive about the limits of their approaches, methods, and findings.

## Introduction

Internet research has recently become a rather fashionable undertaking in the social sciences, spurred on by the rapid development of the technology and by support from the many funding agencies intoxicated with the "information society". Researchers coming from a variety of disciplines and theoretical traditions have been undertaking an impressive array of projects focusing on multiple questions. The hectic pace at which research has proceeded has not stopped many researchers from taking time to consider the suitability of existing methods, or developing innovative approaches for the social study of the medium. However, there has yet to be extensive reflection upon the background methodological perspectives informing research programs. Here, I want to contribute to the beginnings of such meta-methodological reflection. I provide a broad-ranging critical exploration of three dominant perspectives guiding current Internet research. This highlights possibilities for improving methodology and consequently for extending understandings of the Internet.<sup>1</sup>

The paper outlines three strands of Internet research, each focusing upon a different aspect of the "circuit of technology": uses, artifacts, and social contexts. I show how these perspectives can be found in well-established approaches to the social study of both media and technology. Media studies is seen by many practitioners as having bifurcated into culturalist and structuralist approaches (Curran, 1990; Golding & Murdock, 2000; Kellner, 1997a; Morley, 1992). It is divided between research that concentrates upon an analysis of meanings developed at the level of cultural artifacts and research that undertakes a broader sociological analysis of media institutions and their products. The culturalist tradition is itself divided between research that looks to meanings within texts and research that emphasizes the readings of texts as constituting meaning (Golding & Murdock, 2000, p. 71). These three strands (readings, texts, contexts) are paralleled in approaches to the social study of technology (Carpenter, 1992; Lacroix & Tremblay, 1997). Research tends to either emphasize technological uses (paralleling readings of texts), the effects of the technological artifact (paralleling the constitutive power of texts), or the social context (paralleling the production and distribution of texts).

I critically examine each of these strands to determine what they

contribute to an understanding of media technology in general and to the Internet in particular. However, this assessment will not look to prescribe the deployment of specific methods. Such decisions will depend upon the particular questions and focus of individual research projects. The aim here is to explore the links between Internet studies and media technology traditions in order to identify major strengths and weaknesses of the various perspectives taken, and to subsequently reflect on possibilities for improving Internet research methodology.

## Uses Determination

Much Internet research focuses upon the ways in which individuals and groups employ the new medium. This type of research is often found in studies of the way people use the Internet in politics, domestic life, community participation, and business (see, for instance, Harrison & Stephen 1999; Katz & Rice, 2002; Sudweeks, McLaughlin, & Rafaeli, 1998; Thomsen, 1998; Waipeng & Eddie, 2002). For instance, The Pew Center's Internet and American Life Project carries out large phone surveys that gather statistics on how the Internet is being employed socially, politically, and economically by ordinary US citizens. There are also many extremely informative smaller scale uses-oriented initiatives. Bimber's Government and Politics on the Net Project at the University of California carries out valuable research on the use of the Internet in political organization and participation. Facer et al.'s (2001) "grounded" research - into young people's utilization of computers in a context flooded with information society rhetoric - offers one example of the many fascinating qualitative research efforts examining the uses of new information and communications technologies (NICTs).

This "uses" focus is not new. It links to research strands in the social study of both media and technology. In media studies, both North American communications research and British media studies have responded to the pessimism of the Frankfurt School's *Kulturkritik* with a turn towards the uses (or readings) of the media. Whereas *Kulturkritik* advanced a somewhat passive mass audience, these other traditions place human actors at center stage. In Britain, the Birmingham Centre for Contemporary Cultural Studies maintained a critical perspective while overcoming much of the Frankfurt School's high culture bias, emphasizing instead the possibilities of oppositional politics within "popular culture" (Kellner, 1997a). Audience reception studies have further developed this focus upon the active role of the media user. Fiske (1987), who has become a representative figure in the active audience school, stresses that media texts are open to a range of different interpretations. For Fiske, this "polysemy" implies that the reader holds the key to meaning: a "work", following Barthes' distinction, becomes a "text" only upon its reading (Morley, 1989, p. 21). This emphasis upon the autonomy and cultural power of readership has been particularly strong in the North American inflection of audience research (Morley, 1996, p. 286). This is not surprising given that American communications studies has been significantly influenced by the liberal pluralist "uses and gratification" model that developed in response to "effects" traditions (Morley, 1989).

Some studies of technology have extended uses and gratifications theory to the issue of new technologies, including the exploration of computer-mediated communication (CMC). Garramone, Harris, and Anderson's (1986) and Garramone, Harris, and Pizante's (1986) quantitative studies of motivations in the use of political-oriented computer bulletin boards offer classic examples of the extension of the uses and gratifications tradition to CMC research. These early studies have been followed by numerous others that have applied the uses and gratifications approach to the Internet (Charney & Greenberg, 2001; Chou & Hsiao, 2000; Dimmick et al., 2000; Ebersole, 2000; Eighmey, 1997; Eighmey & McCord, 1998; Flanagan & Metzger, 2001; Kaye, 1998; Korgaonkar & Wolin, 1999; LaFerle, Edwards, & Lee, 2000; LaRose & Eastin, 2003; Papacharissi & Rubin, 2000; Parker & Plank, 2000; Perse & Dunn, 1998; Song, LaRose, Lin & Eastin, 2002; Thomsen, 1996). Some of this research has employed the approach to undertake comparative analysis of the motives, interests, and attitudes behind face-to-face and online communication (Birnie & Horvath 2002; Ferguson & Perse, 2000; Flaherty et al., 1998). Other research has compared the gratifications of Internet use with mass media consumption (Randle, 2002). These studies generally assume that the gratifications sought from the Internet by individuals can predict use of the medium.

In such studies, the technological artifact tends to be seen as a neutral tool, able to satisfy the purposes of agents employing it. The artifact has no intentions of its own; it is simply a formal device that extends the capacities of its users no matter what the socio-political context (Trend, 1997, p. 105). As Welchman (1997) puts it, "technology itself has no effects, it's all a matter of how it is used" (p. 155). Any effects are fully controllable through both the use and the design of the artifact; we can choose what technology comes into existence and how it will be applied.

The uses tradition of media technology research, taken as a whole, provides a necessary emphasis upon the way actors purposefully employ information and communications technologies. For instance, Facer et al.'s (2001) qualitative study shows how young people, against the expectations of information society "experts," develop their own interpretations of ICTs and appropriate them for their own ends. However, a uses emphasis can lead to a number of pitfalls if taken too far or in singular fashion.

The idea of media technology as a neutral tool tends to assume a technical fix logic, which sees the development and use of machines of various kinds as the answer to social and political problems (Street, 1992, p. 158). Tied to this is the notion that media technology is a discrete entity with a "thingness" quality. Media technologies are external to both the subjects using them and to the world upon which they are applied. This argument is often ahistorical, presenting media technologies as given, as somehow existing without social origin or context. Some electronic democracy proponents make such technical fix assumptions, considering the Internet to be the latest and best media technology by which to overcome present problems limiting the advancement of democracy (Street, 1997, p. 34). Similar arguments can be found within e-commerce discussions about how to utilize the Internet for increasing profitability. Studies of domestic uses can also follow this line of thinking, particularly

when questions focus upon how people deploy the Internet to satisfy their needs.

Such views of media technology draw upon an instrumentalist understanding of the human agent (Carpenter, 1992, p. 166). They assume an abstract, coherent, purposive subject able to manipulate objects at will, with "uses and users as the causal agents in the production of social action" (Lacroix & Tremblay, 1997, p. 85). This methodological individualism also provides support for ideologies that celebrate untrammelled consumer sovereignty (Golding & Murdock, 2000, p. 71; Lacroix & Tremblay, 1997, p. 85; Morley, 1996, pp. 286-287).

We must not ignore the possibility and indeed the importance of using and controlling media technology for democratic ends (Kellner, 1999). However, it is a mistake to assume that individual actors are in complete control of media technologies. Such an assumption overlooks the structuring of actions by technological systems and neglects the social embeddedness of these systems and their users. We need to take into account these constituting factors if non-reductionist understandings of the Internet are to develop. Hence, I will examine research that focuses upon technological determination and social structuring.

## Technological Determination

There is considerable scholarly interest in the way that the technological *form* of the Internet affects uses and agents. In particular, researchers have looked at how CMC may affect communication patterns, organizational systems, identity, and society at large. One of the most influential bodies of research on the social effects of CMC is known as the reduced social cues theory (see Dubrovsky, Kiesler, & Sethna, 1991; Sproull & Kiesler 1986, 1991). According to this theory, the "inherent characteristics" of CMC lead to a reduction in social cues, with the resulting effects of depersonalization (lack of intimacy), equalization (flattening hierarchy), disinhibition, and subsequently, anti-normative behavior. However, these effects have been readily questioned. The theory has particularly been criticized for its use of overly individualistic (psychology based) assumptions, methods, and interpretations, and its narrow focus upon the norms of business communication and decision-making (Spears & Lea, 1992; 1994; Spears, Lea, & Postmes, 2001; Walther, 1996; Walther & Burgon, 1992). Research drawing upon other starting assumptions and methods has interpreted the social effects of CMC differently. In fact, there is extensive research reporting that the lack of bodily markers in cyberspace may in various ways encourage, rather than inhibit, intimacy and commitment to others (see, for instance, Argyle, 1996; Baym, 1995; 1998; Correll, 1995; Watson 1997; Watt, Lea, & Spears, 2002; Wilbur, 1997). More sophisticated research on the social impact of the Internet's form makes room for the possibility of a diversity of effects of CMC, and accepts that such effects may depend both upon users adapting the technology to their purposes and upon the social contexts involved.<sup>2</sup>

A complex understanding of the effects of the Internet is often adopted by media technology researchers and theorists influenced by postmodern ideas, such as Mark Poster. Poster (1997) notes that in some respects the Internet can be conceived of as a tool (for transmitting data, for example). However, he believes that more socially significant is the way the Internet "instantiate[s] new forms of interaction" and "new kinds of relations of power between participants" (p. 206). Other postmodern theorists agree. Nguyen and Alexander (1996) write that the Internet is a "constructive" medium, producing new realities as "electronic pulses permeate our daily lives" (p. 113). Likewise, Stone (1995) believes that "the Internet, cyberspace, and virtual reality . . . are parts of our very selves . . . they are languages . . . what they do is structure seeing. They act on the systems - social, cultural, neurological - by which we make meanings" (p. 167). Kroker (1992) theorizes "technology as cynical power . . . technological society is described under the sign of possessed individualism: an invasive power where life is enfolded within the dynamic technological language of virtual reality . . . . Indeed, virtual reality - the world of digital dreams come alive - is what the possessed individual is possessed by" (p. 2).

Such arguments draw upon an effects research tradition within both media and technology theory. McLuhan's "the medium is the message" slogan made popular the notion that there are explicit effects embedded within a given medium. The Frankfurt School analysis of the pervasive effects of the mass media has also been very influential, but unlike McLuhan the focus was upon the media's content. In its strongest formulations, the cultural products of the mass media were seen as agents of socialization and political indoctrination. Poststructuralism, with its focus upon language and discourse, has provided impetus to the analysis of the way media texts constitute meaning. This emphasis on the structuring of meaning through the media is extended by Baudrillard and followers who, drawing upon McLuhan, theorize the medium and not just the content as text inscribing meaning.

This tradition in media studies corresponds to the "social impact of technology" literature, which emphasizes the transformations caused by technologies acting on society. The Frankfurt School's pessimism about the colonizing spread of instrumental rationality through, among other things, technological systems, is infamous (Marcuse, 1941; Habermas, 1970). Theorists of postindustrialism, postmodernity, and the information society also tend to see technology as a causal agent, having a pivotal role in social change. For Bell (1973) technology is a central organizing factor in social transformation. Lyotard (1984) and Baudrillard (1983) argue that technology, particularly information technology, is a central agent in the development of the postmodern condition. Similarly, Castells (1999) understands information technology to be the principal driving force in the "network society".

This effects approach highlights the need to consider artifacts as both constituted and constituting. Even in their design and development media technologies are not under the complete control of particular human agents. The Internet is a perfect example of this. Although designed and developed by specific scientists and research institutions linked to particular commercial, political, and military interests,

*the Internet was not created by a sheer act of will . . . . technical change has*

*a momentum which is often independent of those who appear to control it. They [those who appear to stand behind the technology] are as often forced to cope with the many unanticipated consequences of technical change as they are able to plan that change. (Street, 1997, p. 34)*

An emphasis upon the social impact of technology must be part of any communications research. However, as already suggested with regards to reduced social cues research, such an emphasis can lead to distorted understandings if developed without recognition of the social embeddedness of technology. Of course, the enormous impact of media technologies on modern life, including their numerous unanticipated consequences, should not be underestimated. More and more areas of life are encompassed by media technologies. They increasingly shape the way we think and the choices we make. Nevertheless, this impact is not as independent of human control as some utopian (Gates, 1995; 1999; Pool, 1983; 1990; Toffler & Toffler, 1994) and dystopian (Ellul, 1964; Heidegger, 1977; Postman, 1992) media technology theorists indicate. Such accounts tend to reify media technology as an autonomous causal agent, proceeding as if it acted on social life from above with its own independent logic and momentum. media technology in such strong determinist arguments assumes the form of a discreet entity, autonomous from individual or social control. It becomes "a tangible determinate entity - a kind of thing" (Marx, 1997, p. 981).

More sophisticated effects analysis, such as can be found in Poster's (2001a, 2001b) and Castells' (1999) work, emphasizes the way media technologies are socially shaped as well as shaping.<sup>3</sup> Yet for techno-determinist commentators the properties of a particular technology predetermine social outcomes. Little thought is given to the socio-political forces shaping the technology, or the way users may affect final outcomes. Toffler's (1981) work is the classic example of such de-contextualized analysis, where "virtually no consideration is given to the social and historical forces which have shaped the information and telecommunications technologies identified with the third wave of change" (Smart, 1992, p. 74). Many Internet commentators, particularly techno-philic ones like Cairncross (1997) and Negropte (1995), follow Toffler's lead. For such techno-utopians, refusing to adopt the latest media technology will lead societies to social and economic backwardness (see, for instance, Gates, 1999; Pool, 1990). In fact, they generally do not see refusal as a choice. In the case of digitization, Negropte (1995) argues, "[t]he change from atoms to bits is irrevocable and unstoppable" (p. 4). We must simply accept and adapt to the inevitable social transformations wrought by media technologies such as the Internet, transformations that are foretold and subsequently helped along by Net-guru prophecies. Such rhetoric also indicates the operation of a naturalistic discourse, where media technology is seen as part of an evolutionary process free from political control. This is clearly found in Gates' (1999) biological model of digital capitalism. Moore's law, which states that the number of components on a microchip doubles every eighteen months (originally a year), is also often referred to as though it were natural. This naturalistic discourse, as Kellner (1997b) explains, has become particularly evident in "information society" and "information superhighway" rhetoric:

*the 'natural' discourses of the information superhighway (i.e., surfing, cruising, the net, the web, connectivity, etc.) transform culture into nature and*

*make the dramatic development of the information society a force of nature, a natural event that cannot be stopped. Indeed, the discourse appropriates both biological/natural metaphors and the figure of evolution to make it appear that the development of the new technologies and resultant social transformation is a natural process that in addition is a force of human progress, of development to higher spheres of social evolution. Such metaphors of nature and progress cover over the social constructedness of the new technologies, the corporate interests behind the project of technocapitalism and the infotainment society, and the social struggles over its future.*

As Kellner indicates, this information society rhetoric is often used to justify ideologically-driven public policy. Examples include the Bangemann Report (1994) which has been used throughout Europe to justify liberalization of the information and media sectors, Gates' (1995, 1999) writings on the inevitability of digital capitalism which operate not only as a marketing tool for Microsoft's latest products but also provide legitimation for free market agendas, and Toffler's techno-determinist "third wave" thesis which was used by Newt Gingrich to legitimate his information super-highway plans. Toffler's writing also inspires the work of cyber-libertarians like Barlow (1996), Dyson et al. (1994), Grossman (1995), Keyworth (1997), and Kelly (1998). These libertarians promote their particular form of politics as the singular evolutionary path of a technological development that is to be most fully realized as a state-less cyberspace. We must, it seems, accept and adapt to the social and political forms that new media technologies necessitate. Debate about alternatives is superfluous. We cannot decide what type of society we want to develop through cyberspace; cyberspace itself will determine the socio-political forms that arise. This argument obscures the interests and social forces behind the discourses and material forms developing. By calling upon an asocial necessity, it justifies any social consequences that result from the implementation of "technologically progressive policies".

Cyber-libertarianism tends to be positive about the direction of the Internet for society. A more dystopian current of technological determinism can be found in some cyber-theory inspired by stronger currents of postmodernism (see, for instance, Kroker, 1992; Kroker & Kroker, 1997; Kroker & Weinstein, 1994). Borrowing from poststructuralist discourse theories and Baudrillardian hyperreality, and reminiscent of the pessimism of the Frankfurt School, this fatalistic discourse tends to totalize the domination of life by large technological systems (Marx, 1994, p. 257). This pessimistic postmodernism, like the more celebratory cyber-libertarianism, encourages mystification and passivity: withdrawal from cyberspace being seen as the only option and even this may not be possible. There is also a strain of conservative, non-postmodern techno-dystopianism that calls for withdrawal from cyberspace on the basis that it is essentially corrupted and corrupting (see, for instance, Slouka, 1995). These pessimistic techno-determinists see definite and unremedial effects written into the Internet, deeming it irredeemable no matter the social context.

Despite its neglect of the agency of subjects, techno-determinism has strong parallels with one-sided uses arguments. Both imagine media technology as independent from social contexts. In both cases media technology is external to the social, the difference being where the agency is placed - with the user or with the technology. Whereas a strong uses

position would go as far as to say that there is no text outside of readings, a strong technological determinist position sees nothing outside text. But the social context must be taken into account. While many of the theorists and researchers considered above do in fact admit the social situatedness of media technologies, there are powerful traditions of social research that see the social context as the central determining aspect of media technology outcomes. I will now consider how these traditions influence the perspectives of a third strand of Internet research.

## Social Determination

This third strand of Internet research focuses upon the way outcomes are affected by social and economic structures and by the social construction of technological artifacts. Here researchers emphasize the development and deployment of the Internet within social systems and cultural contexts that have continuity over time and between media technologies. As such, they directly draw upon "social determinations" traditions of media and technology research. In media and communications studies the approach is most prominently represented by the critical political economy tradition, while in technology research it is promoted by a range of approaches which come under the general category science and technology studies (STS).<sup>4</sup>

Critical political economists of communication look at the determining impact of the ownership and control of the media upon subsequent development, deployment, and use (see, for instance, Golding & Murdock, 1997; Mosco, 1996). They generally promote a complex reading of Marxism, going beyond models that assume a direct determination of culture by economic structures. For instance, Garnham (1990) proposes "a hierarchy of determination within a (capitalist) mode of production such that the possibilities at each succeeding level are limited by the resources made available by the logically preceding level" (p. 10). Although positing ultimate determination by the economic, determination is used in a "soft" sense, not as the fixing of a causal relationship but rather as a setting of limits. The economic does not unilaterally predetermine human action but "it does make some courses of action more likely than others" (ibid, p. 6). Golding and Murdock (2000) similarly argue for a critical political economy that rethinks "economic determination in a more flexible way", emphasizing the need to focus "on the interplay between the symbolic and economic dimensions of public communications" (pp. 70, 74). However, they also contend that the economic organization of the communications industry is "the logical place to begin an analysis of contemporary culture", following "Stuart Hall in seeing determination as operating in the *first* instance" (ibid, p. 74). Like Garnham, they argue that "critical political economy is concerned to explain how the economic dynamics of production structure public discourse by promoting certain cultural forms over others" (ibid, p. 85).

In the field of technology studies, the STS tradition has focused upon the way technology is socially embedded and constituted. It intends to investigate fully the social make-up of technology: to open the "black box"

of technology in order to expose and analyse its social, cultural, and economic patterning, factors which are often neglected by researchers focusing upon uses or technological effects (Williams & Edge, 1996, p. 54). Social and technical "choices" (whether in "invention", "production", or "implementation") shape the form and content of technological artifacts (ibid).

Although critical political economists and STS adherents both agree that the uses and impacts of media technologies are framed by social context, their focus is somewhat different.<sup>5</sup> While STS researchers often concentrate upon the direct social inputs in the development of specific technological systems, critical political economists attempt to explore systematically the role of wider power relations and social structures. Despite their differences, the research of both groups, like that of the uses and effects approaches, can lead to distorted understanding of media technology processes if developed without reference to user agency or material limits. As Golding and Murdock (2000, p. 73) point out, social contextualist positions, when over-extended, can degenerate into instrumentalism and/or structuralism. In terms of instrumentalism, critical political economists and STS adherents can place too much emphasis upon the intentionality of agents. STS researchers tend to concentrate upon the micro settings of the development and deployment of technological artifacts, focusing particularly on the interactions between actors within systems. The risk is that such research may become narrowly focused upon the role of agents and ignore the broader institutions and/or structures impacting on outcomes. This leads to descriptions and post-hoc explanations that over-emphasize the power and autonomy of actors (Williams & Edge, 1996, p. 65).<sup>6</sup>

Yet, according to STS proponents, the idea that technologies embody social choice is meant to allow for a more complex understanding of the place of agency in technological development than "choice" may imply. Users do not simply manipulate the material world at will. Rather, there is a mutual shaping process between social contexts, technology, and users. The various choices stemming from the social settings involved in the process of innovation and deployment become embodied within technologies such that

*technology can be regarded as congealed social relations - a frozen assemblage of the practices, assumptions, beliefs, language, and other factors involved in its design and manufacture. . . . [this] suggests that the social relations which are built into the technology have consequences for subsequent usage . . . The social relations confronting the user of technology are therefore relatively durable because they are not easily disrupted and repackaged. (Woolgar, 1996, pp. 89-90)*

Critical political economists, though generally placing more importance upon the wider social context than STS researchers, can also be guilty of a certain voluntarism: they may overstate the degree to which media technologies are tools for the powerful to pursue their interests. Golding and Murdock (2000) point to Herman and Chomsky's "propaganda model" as a good example of this exaggeration of the extent to which the powerful "manage" public opinion through the mass media (p. 73).<sup>7</sup> Some recent critiques of the commercialization of cyberspace could be seen as echoing a similar conspiratorial air. Herbert Schiller (1995), for instance,

argues that there has been an orchestrated corporate takeover of information and communication systems, including the Internet, which are now at the disposal of unaccountable private economic power. While certainly important for alerting us to the dangers facing democratic communications due to the concentration of power and wealth in the hands of the few, there is a tendency for such analysis to inadequately account for how media technologies involve multiple interests, unintended consequences, institutional and technological (material) rigidity, and possibilities for alternative uses.

However, like STS researchers, most critical political economists are well aware of this instrumentalist pitfall. They attempt, as Golding and Murdock (2000) assert, to take into account the contradictions and complexities that always prevent the powerful (or any other groups) from having total control (p. 74). Both traditions focus upon the embeddedness of media technologies within social and cultural systems. However, such an emphasis on embeddedness could lead too far in the other direction, emphasizing social structuring to the neglect of technological or user determinations. A social determinism that neglects the materiality of technology can be found in some work associated with the STS tradition. STS researchers generally insist upon the mutual shaping of technological artifacts and social life. An emphasis on social shaping is meant to remedy the problems of technological determinism while avoiding "a simplistic notion of 'social determinism' that sees technology as reflecting a single rationality, such as an economic imperative" (Williams & Edge, 1996, p. 54). Yet stronger social constructivist accounts can be read as neglecting the very real effects of the form and physical properties of technology on meanings and uses.<sup>8</sup> While technologies are given meaning by cultural understandings, needs, and values, they also have very real material characteristics and limits that must be addressed.

One-sided social determinism can also be detected in some recent critical political economy media analysis. But rather than ignoring the material effects of technology, the problem here is that overly structuralist critical political economy accounts can downplay the agency of certain users. For instance, Schiller (1995) argues that the rules of the market have taken over. Information technology is simultaneously a tool of the powerful and an essential structural component of the capitalist economy.<sup>9</sup> This may largely be true, but analysis also needs to take account of the possibility of factors acting in multiple directions, not simply those actions or mechanisms supporting corporate domination. A one-dimensional systems analysis is clearly apparent within Harris and Davidson's (1994) Marxist analysis, *The Cybernetic Revolution and the Crisis of Capitalism*. Drawing out a strongly determinist reading of Marx via Toffler's third wave thesis, Harris and Davidson argue not only that the economic base drives social and cultural change, but that information has now become the central means of production so that "information capitalism" now fully determines our collective fate.

This critical review of the social contextualist strand brings to a close my survey of some of the central methodological traditions informing Internet research. I have shown that these traditions tend to emphasize either the use, technological form, or social context associated with communications media. All three aspects clearly have bearing on outcomes, but they can lead to flawed analysis when taken alone. In the next section I will reflect

upon how to undertake Internet research so as to overcome the problems that can result from simply focusing on one type of determination.

## Towards Non-Reductionist Research

Internet research is not a monolithic entity, but is undertaken by a diversity of researchers from a variety of social science traditions, researchers who draw on numerous methods to ask a multiplicity of questions. However, I have argued that much Internet research fits into three broad strands that each draw upon media technology traditions prioritizing particular determinations. I have shown that over-emphasizing a particular determination can lead to narrow or distorted understandings. Despite the differences of approach, these limitations arise from two common and overlapping problems: separating technology from its social context, and narrowly focusing upon a single aspect of determination. I will briefly discuss these two problems in order to consider possibilities for how to undertake research that will provide non-reductionist understandings of the Internet.

The first problem occurs when media technology is seen as an independent "thing." This notion of media technology as an autonomous artifact needs to be avoided. As Leo Marx (1997) says, there is always a "distinctive material device, a piece of equipment", but this often constitutes a small aspect of technology. "[I]n the major contemporary technologies the material component - *technology* narrowly conceived as a physical device - is merely one part of a complex social and institutional matrix" (p. 979). This matrix, Marx argues, stretches across a wide range of social institutions, including private corporations, systems of capital investment, organized bodies of technical know-how, government legislative and regulatory bodies, the military, universities, and so on. With technology, Marx (1997) asserts, we are dealing with an indeterminate, messy, incoherent entity (p. 980). The lines separating different technologies from one another and from society are murky, relative, and contingent upon a prevailing social consensus. As Menser and Aronowitz (1996) argue,

*technology permeates, or inheres in, all . . . regions, practices, and ideologies. . . . The objects of our critiques have become impure, confused, indistinct, "fuzzy" in the way in which even mathematics has accepted "inexactness" as sometimes closer to the way things really are. (pp. 8-9)*

However, we must be careful not to take such claims of indeterminacy too far, for as Marx (1997) warns, this may lead to an understanding of technology so inclusive, so general, so vague that it becomes almost completely vacuous and resistant to designation (pp. 981-983). Such an understanding would mean that we are unable to say anything of any real interest or value about a technology or about technology in general. This is the case, as Marx (1997) indicates, with Jacques Ellul's notion of *technique*: "By identifying it with every act of making or doing, material or social, he drains it of all particularity and discreteness; the result is that it has little or no useful, specifiable meaning" (pp. 983-984). And because this technique is so intangible and all-pervasive, it seems to fall beyond

human control.

To avoid viewing media technologies as either autonomous "things" or amorphous "no-things," it is important to view them as both constituted within and impacting upon social relations and cultural meanings (Sclove, 1992, pp. 140-141). This idea - that media technologies are both socially constituted and constituting - helps overcome the second closely related problem that the three traditions may slip into: the problem of singular causation arguments.

In some media technology research, as demonstrated earlier, one factor can become a fixed variable in a linear relationship with outcomes. Even those who prescribe complex levels of determination, such as critical political economists, in the end tend to favor just one determination. As seen above, such singular causation arguments risk instrumentalism, technological determinism, or structural determinism. In reality, no simple hierarchy or linear causation can be finally specified. As Menser and Aronowitz (1996) argue, we need to counter such determinism with a "theory of *complexity*" that rejects determination in the sense of "a one-to-one correspondence between the causal agent and its effects" (pp. 8). Following Mosco (1996), it is necessary to take into account the "overdetermined" or "multiply determined" nature of social phenomena including media technology (pp. 5, 137-138).

This calls for a non-reductionist analysis that is sensitive to the complex interplay between multiple elements. Such a multi-determinations or mutual constitution analysis recognizes that each so-called determining factor is itself embedded within and constituted by a system of inter-linked constitutive processes.<sup>10</sup> These processes and the relationships involved must not be assumed to be linear or fixed or of equal influence (although such cannot be discounted). A multi-determinations perspective "remains open to specifying the nature, strength, direction, and duration of a relationship between processes" (Mosco, 1996, pp. 5-6).

But how is such analysis to be undertaken in practice? We can find within the media technology traditions already discussed productive starting points, points from which some Internet research is already developing. For instance, Mosco (1996) - along with other reflexive critical political economists - has been rethinking political economy in a non-reductionist way, advancing a multi-dimensional and trans-disciplinary analysis of networked communications that pays particular attention to the contribution of cultural studies. An evaluation of the Internet via a combination of political economy and cultural analysis is effectively undertaken in Franklin's (2001) STS-informed evaluation of the politics of representation through cyberspace. STS, which in general strongly emphasizes mutual constitution, also provides a useful starting point for non-reductionist research, particularly when sensitive to the broader social systems involved. Flichy (1995) offers an exemplary study, exploring technological innovation through an examination of the technical and scientific sphere, the political and economic context, and the uses of the technologies involved. Other NICT researchers have adopted Giddens' structuration theory when attempting to account for mutual constitution. For instance, Samarajiva and Shields (1997) have directly drawn upon it in their social study of computer networks. Structuration, together with John Thompson's critical media theory and Bauman's

sociology of post-modernity, strongly influences Slevin's (2000) wide-ranging analysis of the Internet and society. Habermas' system-lifeworld distinction offers another multi-dimensional methodological framework for overcoming the partiality of the three dominant strands of media technology research, a framework that I utilized to evaluate the Internet-democracy relationship (see Dahlberg, 2000).

The list of possible beginnings for non-reductionist Internet research could be extended further. Here I want to point to just one more interesting possibility. David Morley and Steve Woolgar, amongst others, have utilized the metaphor of the text to think through the mutual constitution involved in media technologies. Against Halloran's (1970) and Fiske's (1987) models of "reader sovereignty" and also against the opposite, textual determinism, Morley has developed Hall's idea of a "preferred reading" structured by the social context. According to Morley (1989), "[t]he point of the preferred reading model was to insist that readers are engaged in productive work, but under determinate conditions. Those determinate conditions are supplied both by the text, the producing institution and by the social history of the audience" (pp. 19). Applying the metaphor of the text to technology, Woolgar (1996, 1991a, 1991b) shows how the idea of a preferred reading allows for all three forms of determination. Embedded within the social context, technology can be thought of as "congealed social relations" that "configures the user-reader" and has "interpretive flexibility:" while containing a preferred reading, technology is open to various uses. This conceptually rich understanding of media technology has yet to be explicitly applied by Internet researchers. In fact there is some doubt, even amongst sympathizers, whether or not the text metaphor is as straightforwardly applicable to the Internet as it is to more bounded and located technological artifacts (Hine, 2000, p. 35). However, the metaphor does capture mutual constitution nicely, providing a useful conceptual guide (rather than specific methodological model) for Internet research.

I do not wish to promote any one of these approaches in particular, or for that matter to argue for specific methods (which would be dependent upon the questions at stake). I merely wish to argue that a multi-determinations methodological perspective is needed. Ideally, research would take into account the complex interplay between multiple intersecting and constituting elements. So, for example, research into Internet-democracy practices would want to explore the democratic possibilities afforded by the technical aspects of the medium, user motivations and intentions, and the social structuring of online communications and identities. However, resource constraints may make fully multi-perspectival and multi-dimensional studies infeasible in many cases. Researchers may also wish to follow a particular media technology tradition and/or focus closely on a single relationship. In these cases, researchers must at least recognize the multi-dimensionality of determination, and be reflexive about the limits of their approaches, methods, and findings. While this may seem a rather banal conclusion, the critical examination of Internet research in this paper has shown the necessity for this call for greater sensitivity to the complex interplay between multiple intersecting elements that make up the character of the Internet.

## Footnotes

1. In this paper I am talking about enhancing understanding of any aspect of the Internet, its development and deployment, how it is used, who uses it, its impact on self and social relations, etc.
2. Watt, Lea, and Spears (2002) outline one such sophisticated approach within CMC research and reference a number of studies that look to account for the variable effects of the technology within social context.
3. Castells' network society theory could be seen as bordering on technological determinism, as van Dijk (1999) illustrates.
4. For recent critical political economy analysis of the Internet, see Barney (2000), McChesney (1999), McChesney, Wood, and Foster (1998), and Schiller (1999). STS encompasses a number of schools of research, ranging from the sophisticated realist social shaping of technology tradition to more constructivist approaches. It is not my task here to define and delineate these particular traditions, see instead Lievrouw (2001) and Mackenzie and Wajcman (1999) for useful overviews. My task is to focus upon the social determinations perspective as a whole. Internet research that draws upon STS approaches includes Bakardjieva and Smith (2001), Flanagan, Farinola, and Metzger (2000), Hine (2000), Lievrouw (2001), and Thomas and Wyatt (1999). STS has been influential within a number of large-scale information and communications technology research programs in the UK including the 1985-95 Programme on Information and Communications Technologies (PICT) (see Dutton, 1996, 1999), The Virtual Society? research program (see <http://virtualsociety.sbs.ox.ac.uk/> and Woolgar, 2002), and its successor The E-Society research program ([http://www.esrc.ac.uk/ESRCContent/research\\_funding/E-Society.asp](http://www.esrc.ac.uk/ESRCContent/research_funding/E-Society.asp)).
5. It is important to note here that a central part of this social constitution, as Golding and Murdock (2000) and Garnham (2000) emphasize, is an analysis of the historical processes involved. For examples of such historical analysis of the social constitution of NICTs including the Internet see Flichy (1995), Thomas and Wyatt (1999), and Winston (1998).
6. Another example of this narrow focus upon individual agency and descriptive accounts of technical developments is Ceruzzi's (1996) account of the invention of personal computing. In contrast, other STS examinations of NICTs, such as Winston's (1998) history of communications technology and Abbate's (1999) history of the Internet have investigated the economic and political forces (material and ideological) involved in innovation.
7. Herman (1996) argues that there is less intentionality and more complexity involved in the 'propaganda model' than his critics believe.
8. It is important to emphasize that it is only some radical or misguided proponents of the social construction of technology position can be read as promoting the non-materiality of technology. While arguing that the

meaning of technology is thoroughly socio-cultural, none of the main branches of STS would deny that the material elements of technological artifacts guide or limit interpretation and action.

9. Schiller's work shows how structural determinism can slide into instrumental determinism and vice-versa: the argument that the relations of production determine social outcomes sliding into the claim that media technologies are instruments of elites. Despite this tendency towards economic reductionism (and instrumentalism), I agree with Thompson (1995) that his general theory has been helpful for understanding media globalization (p. 164).

10. I concur with Mosco (1996) that in order to emphasize the interplay between non-reducible factors the term mutual constitution may be preferable to a term containing the word determination (pp. 137-138). Determination to some would connote singular linear causality. At the same time, mutual constitution does not indicate the same sense of multiplicity that multiply-determined or overdetermined does. As such, I have preferred the negative term non-reductionist in the title of this paper. I would be open to suggestions as to a more positive and encompassing term.

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