Technology, innovation, power and social consequence

Book section

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<H1>Introduction[1]</H1>

There are many claims and counterclaims in the academic literature on innovations in information and communication technologies (ICTs) about their relationship to power. Different disciplinary perspectives privilege various assumptions about the social consequences that are likely to accompany the innovation process. In this chapter, some of these competing analytical perspectives are considered briefly. This is followed by an assessment of some of the issues that are deserving of deeper investigation. Although some analysts envisage a relatively smooth progression towards equitable access and use of these technologies in ways that, on balance, are empowering for citizens and consumers, others do not. In many instances claims about the nature of this relationship are supported by weak empirical evidence or underpinned by a disavowal of the notion that technologies are political. In this contribution, my aim is to set out the foundation for the assertion that the ground is very flimsy for the claim that innovation in ICTs inevitably favors decentralization, the flattening of hierarchy, or the automatic empowerment of human beings.

<H1>Analytical perspectives in contention</H1>

ICTs always have been entwined with changes in society, an association that has been examined in detail by historians.[2] In some cases these technologies have been characterized as being revolutionary because of the new opportunities they offer for mediated relationships. Digital technologies are often depicted in the consultancy literature as calling into existence a new inclusive, social, and economic order (Le Guyader 2009), but a more measured response typically indicates that these technologies become woven into society in very complex ways. We can regard ICTs as being neither necessarily transformational nor completely malleable in the hands of their users (Mansell et al. 2007; Mansell and Silverstone 1996b). We have several decades of scholarly research that consistently confirms this observation.[3]

Nevertheless, even today, in the academy, the most predominant analytical approach in the social sciences to innovations in ICTs remains diffusion theory, a theory that focuses principally on technology and individual behavior. In *The Diffusion of Innovations*, Rogers (Rogers 1962, 1995) aimed to explain how to inculcate awareness and enthusiasm for technical innovations such that even those individuals most resistant to their adoption might do so. By 1995, when the fourth edition of his book was published, he had modified his theory to account for many of the contextual factors that influence the diffusion of new technologies. Even so, the central concern in this theoretical model remained explaining the rate and direction of adoption of new technologies such as ICTs.[4] Research in the diffusion of innovations tradition has continued to develop and inform new generations of scholarly work on the patterning and scaling of networking—both technical and social (Monge and Contractor 2003)—as well as in the burgeoning fields of advertizing and marketing that are linked to behavioral

theories of consumer decision making (Egan 2008; Van den Bulte and Joshi 2007). Most studies in this tradition presume that consumption is a matter of individual choice and that all such consumption is desirable. The social implications of consumption, the ethical issues raised by privacy intrusions and the personalization of ICT-based services, and the sustainability of intensely networked and mediated environments supported by ICTs are simply not considered.

In line with the predominance of the diffusionist tradition, there are substantial efforts to measure the ICT diffusion process. This work started in the US with the early contributions of Machlup (1962) and Porat and Rubin (1977), but it has since become a global ambition to benchmark progress toward the information society, knowledge economy, or whatever label is used to capture the phenomenon whereby information (or communication) services make a growing contribution to economic activity and information-related occupations as compared to industrial output or agriculture (Bell 1973; Ito 1991). Work in this tradition proceeds through the development of indicators and surveys that enable comparisons of a country's or region's investment performance and use of ICTs (OECD 2005; UNCTAD 2009), the assumption being that 'more' is always better.

The diffusion of innovations tradition is complemented by economic analysis of characteristics of information. Economic analysis has been brought to bear on the market exchange of information (Brousseau and Curien 2007: 21). As Brousseau and Curien point out, "while ICTs seem to provide the technical support which should favor the efficient performance of an ultra-competitive market economy, they make information a public good, thus sowing the seeds of a cooperative economy." This means that while

some analysts are very enthusiastic about the growth and potential profitability of markets for information, others stress that traditional intellectual property rights protection should not be used to hinder the growth of an open, sharing, more cooperative environment that fosters artistic, educational, and scientific endeavor.[5] They argue that the market exchange of information needs to be complemented by analysis of the benefits and costs of information exchange, less encumbered by the costs of negotiating property rights (Benkler and Nissenbaum 2006; David 1995, 2005; Lessig 2001; Mansell and Steinmueller 2000). While attention has been directed to the consequences of persistent economic power in media, information, and communication markets (McChesney and Schiller 2003; Mosco 1996; Schiller 1999), there has been a substantial amount of enthusiasm about the Internet and new opportunities for self-publishing using social networking sites as a means of consumer and citizen empowerment.

If we turn away from these two dominant traditions, towards the work of more critical scholars who are informed by theoretical traditions that are more open to uncertainty and to the messiness of the everyday lives of the producers and users of ICTs, we find many studies of the relationships between ICT networks, information flows, and time–space reconfiguration. This work has proliferated since the mid-1990s (Castells 1996, 1997, 1998, 2001, 2009; Slevin 2000; van Dijk 2006). Undertaken from many different perspectives, there is considerable agreement that it is in the analysis of the interplay between online and offline activities that we are likely to gain purchase on the social, political, and cultural consequences of innovations in ICTs (Orgad 2007). While many new processes and practices are enabled by the spread of ICTs, warranting in some instances the label "revolutionary," there are also continuities with earlier developments.

And indeed, we have skeptical accounts that are dubious about whether societies are being radically altered by the spread of ICTs (Garnham 2000; Webster 2006).

Studies in the diffusion of innovations tradition neglect the fact that ICTs are implicated in complex power relationships. But in those traditions that do consider power relations there are bifurcations between macro- and micro-analytical approaches. As Mattelart suggests, in situated accounts emphasizing mediations and interactions there is a tendency to overlook aspects of technology production and a "technoscientific system remains, more than ever, marked by the inequality of exchanges" (Mattelart 1996/2000: 109). Alternatively, studies that privilege analysis of political and economic power sometimes neglect the agency of individuals.

Research in the physical sciences, computer science, and engineering is mainly devoted to promoting innovations in ICTs (Mansell and Collins 2005) and studies of ubiquitous computing, software automation, the Semantic Web, and or "knowledge management" receive substantial financial support as compared to studies informed by the social science disciplines, but the former give little attention to the uncertainties of the innovation process—ethical, social, economic, or political. Some of those concerned to promote more rapid diffusion of ICTs—whether the Internet or the mobile phone—turn to philosophy to defend their assertion that a wholly new way of thinking is called for in order to understand the consequences of ICTs. However, since it is the interpenetration of the old and the new technologies, and the older and newer practices and meanings that matter for the social order, it seems essential to ensure that the place and consequences of these technologies are considered through an analytical lens that deploys concepts of power and the political to make sense of the transformations that are underway. Thus, we

need to apply some of our existing ways of thinking in the emerging context of mediated networks.

<H1>ICTs, power and inequality</H1>

Applying some of our existing ways of thinking in the emerging context of mediated networks to make sense of ongoing transformations is especially important because the production and consumption of ICTs are marked by inequalities, frequently, though not always, reflecting the inequalities of societies. As a result the technology diffusion process itself needs to be understood in the context of how these technologies enable changing social practices, offer new methods of communication and information sharing, encourage network forms of organization, and give rise to new learning dynamics and commercial practices. We need a basis on which to assess the desirability of encouraging innovations of certain kinds but perhaps not of others because, while feasible, they may be deemed unethical or simply unhelpful. Judgment—individual and collective—is necessary. Perhaps one of the greatest requirements is for a more broadly based acknowledgment of the need for new literacies and communicative resources for expressing cultural identity, fostering new kinds of "community" and mediating experience (Livingstone 2007, 2008; Livingstone et al. 2008).

In essence, we require deeper insights into the embeddedness of ICTs in different contexts to understand how mediation processes are influenced by them, and we need a consideration of their social consequences, but we also require an acknowledgment of power and the political in all mediated relationships. One approach that has been helpful

over the past 30 years in this respect is the analysis of the dynamics of "techno-economic" systems. This work, particularly through its focus on the qualitative aspects of the diffusion of ICTs, has shown that changes in technological, organizational, social, cultural, and political systems occur unevenly in time and space. Each system or subsystem of the innovation process encompasses inequality and power dynamics that influence the distribution of resources and the new spaces of opportunity and insurgency available to any given actor. However, helpful as this tradition of research is in drawing attention to the dynamics of such systems, most of those contributing to it do not acknowledge the need for an explicitly theorized account of power. There have been attempts to do so, of course, but the core of this tradition remains tightly focused on the technologies and the economic impacts of their diffusion.

In *Communication by Design: The Politics of Information and Communication Technologies*, we sought to link the "techno-economic" tradition to studies of the social processes, power relations, and agency of technology producers and consumers. As a result, we were able to make observations about ICT innovations such as the following. These technologies "raise profound concerns about the way advanced information and communication technologies influence industry, government policy and our every day lives … and about their capacity to contribute to a more equitable and democratic society" (Mansell and Silverstone 1996a: 1). We asserted that an understanding of the complexity of the innovation process was not approachable through traditions typified by the dominant diffusion of innovations approach. This complex cluster of technological and social interdependencies required then, as it does now, a multidisciplinary

perspective (Mansell and Silverstone 1996b). However, that in itself is insufficient unless power relations are also examined.

We suggested that the ICT innovation process should be treated as a "dialectic in which power is exercised in the production and use of technological artefacts as well as in the institutionalization of behavior" (Mansell and Silverstone 1996a: 7) and that this entails a methodological challenge to undertake work at the individual, household, firm, or organizational levels. What cries out for investigation is the politics of the innovation process itself. A process that involves "a politics engaged in by participants—individuals as well as institutions … It is, finally, a politics deeply embedded not just within the institutions that design and distribute technologies and services, but within the technology itself … containing and constraining behavior, and embodying … both the normative and the seductive" (Silverstone and Mansell 1996: 213). And crucially, "the structuring of our symbolic environments which these technologies uniquely undertake is an activity which still has to be managed: accepted, rejected, transcended, or transformed" (Silverstone and Mansell 1996: 219). The politics of the management of the technological innovation process were what was at stake and, arguably, continue to be so today.

When we consider the strategies of various actors and the social consequences of each new generation of technology, we need to bear in mind that

> <Extract>these [developments] occur locally, but they are interpenetrated by manifestations of the global in complex ways involving power relations which, at least potentially, enable new opportunities for learning and diversity … Whether these opportunities make a profound difference in people's lives and whether they

are understood as helpful are questions that the scholarly community must continue to assess.</Extract> <Source>(Mansell 2009)</Source>

<H1>Practices and strategies in everyday life</H1>

Essential to any perspective on ICT innovation that takes power and the political into account is an acknowledgment of the significance of the practices and tactics of "everyday life." Following Certeau, investigations of innovations in ICTs need to examine the new "ways of operating." "They need to show how these constitute the innumerable practices by means of which users reappropriate the space organized by techniques of sociocultural production … to bring to light the clandestine forms taken by the dispersed, tactical, and make-shift creativity of groups or individuals already caught in the nets of 'discipline'" (Certeau 1984: xiv). In other words, they need to seek out the spaces of indeterminacy and to allow for potentially empowering developments instead of assuming either that these are inevitably present or that they are always absent.

In addition, following Silverstone, studies of ICT diffusion need to contend with the fact that "the world of globally mediated communication offers and to a degree defines the terms of our participation with the other" (Silverstone 2007: 27) and that "access to, and participation in, a global system of mediated communication is a substantive good and a precondition for full membership of society, and that the distribution of such a right must be fair and just" (Silverstone 2007: 147). Taking these considerations into account in assessments of ICT, and acknowledging that we require analytical tools addressed to the meso- and macro-levels of investigation as well as the individual agent, it is essential to conceptualize and analyze the strategic interests of

various groups. This can be achieved in many different ways, one of which is to consider how the interests of institutional actors are being articulated through time. We (Mansell and Steinmueller 2000) developed, for example, an analytical framework focusing on the changing relations of incumbency, insurgency, and virtual community status in the context of ICT innovation.

Absent from that analytical framework was a consideration of whether an intensely networked world yields some form of "collective intelligence" (Sunstein 2006; Surowiecki 2004; Tovey 2008) and a new potential for the expression of individual creativity, yielding the kinds of empowerment envisaged by many forecasters. There is no doubt that big changes are underway as the information society extends to support multiple identities, where individuals engage in switching identities, undertaking, using, and dropping roles at various times. These practices are, arguably, as old as human civilization, but the new networked practices of everyday life are creating a changed social environment as a result of the scale and scope of today's global networks (Rab 2006). As a result, there are many signs of a blurring of boundaries between formerly distinct realms of social activity. These changes are visible in the realms of commerce, entertainment, and learning; in the personalization and professionalization of services; in the conflation of private and public life; and in the growing emphasis on the feasibility of using electronic services to support civic participation and democracy.

<H1>Renewal of contestation</H1>

There is contestation over the meaning and social significance of these developments and little sign of consensus over whether networked individualism or collective action is the

predominant trend, much less as to whether the latter should be privileged over the former. There is even less agreement about whether access to increasingly vast resources of information is consistent with the availability of reliable or useful information, and, indeed, whether the fact that many individuals can become active communicators means that citizens can also be co-decision makers about the parameters within which they live their lives. Still to be investigated more deeply is whether it is important to distinguish between "real" and "unreal" intimacy; whether intensive networking favors heightened sociability or enhances anti-social behaviors; whether the new forms of mediation favor social isolation or inclusion; and whether "always on" networking yields a work–life balance that is empowering or increasingly stressful. The mediated matrices of everyday life are raising issues about trust, privacy, identity management, and safety. At the individual level there are divergent views, from the complacent to the defeatist, in these areas, as suggested by this quotation:

<Extract>Me, myself and I: manage online identity more safely. A scrap of information here, a little detail there … the web is safe if you guard what personal and financial information you provide. Or is it? Identity theft and cyber-spying are on the rise, and keeping track of what you reveal is nigh on impossible. </Extract><Source>(Cordis 2010 n.p.)</Source>

From spammers and phishing to hoaxes, hackers, spyware, adware, and Trojan Horse viruses, we are finding that surfing the web is becoming synonymous with new forms of surveillance and that security and actual and perceived risk are becoming intertwined in

new ways. Surveillance brings new threats to civil liberties even though it is widely accepted by some citizens. And despite the fact that the growing use of databases on children, migrants, and "pre-criminals" is contested, it is growing nonetheless in the UK and elsewhere in Europe (Anderson et al. 2007). Improvements in data management are occurring relatively slowly compared with the proliferation of databases containing personal information. Although the political considerations and civil rights issues associated with the use of "social sorting software" are becoming better documented (Braman 2010; Gandy Jr. 2009; Lyon 2007), the increasingly pervasive use of these techniques is reinforcing social inequalities. This is inconsistent with the simple claims about the relationship between networking and citizen empowerment.

These developments suggest the importance of digital literacies, broadly understood to embrace cognizance of the uses to which networking is being put and a capacity to make judgments about whether or not these practices are justified or should be resisted through individual and collective means. Also needed is a better understanding of the respective roles of family and peers in inculcating these literacies, what educational practices should be encouraged, and whether literacies should be seen as political issues or left to the resolution of the market. There is, of course, also the issue that even if citizens can speak about these kinds of issues in a knowledgeable way, it is not at all clear where they will find the deliberative forums in which their voices might be heard (Dahlberg 2001; Dahlgren 2005; Lievrouw 2010).

<H1>Conclusion</H1>

There are many social dilemmas confronting all those who conduct their lives in mediated spaces alongside their material lives. We do not know whether, for example, the predominant trends are towards social contacts widening or narrowing, enhanced democratization or the concentration of power, enhanced individuality and personality multiples, a new form of mass society in which "mass self-communication" comes to predominate (Castells 2009, 2007), or greater user creativity and empowerment or the next generation of the digital divide (Hargittai 2002; Jung 2008; Zhao and Elesh 2006).

Technologically mediated societies have been with us for centuries, but the most recent changes are associated with codifying and manipulating information. In this context, we know that 'assembling the "tools" is only part of the task … Measures must be taken to assemble the human capabilities and related technologies to make the best use of the new opportunities offered by ICTs' (Mansell and Wehn 1998: 261), yet it appears that there is resistance to learning this lesson, just as there was historically. This is because decisions in this area are highly political and necessarily judgmental. What criteria, for instance, should guide management of our non-place-based identities? What human rights and responsibilities should be associated with the emerging networked order? Once we acknowledge the political, we confront the fact that all choices made concerning the mediated environment of the twenty-first century are political as well.

Yet the headline digital narrative continues to suggest that ICTs mean the end of hierarchy, the ascendance of an open commons for information, and the decline of barriers to information sharing. If this is so, then economic and political power may shift irreversibly to individual information producers and citizens. Acquiring the new literacies may be relatively less problematic for each generational cohort (Williamson et al. 2010),

and the active mass media audience may be in the process of becoming the new media content or information producer. There is no doubt that there is a proliferation of blogs, SMSs, email lists, and decentralized networks. As more citizens become information producers there is a tendency to assume that the standard diffusion model will run its course so that all citizens eventually will be embraced by an inclusive information age, and included in ways that are to their advantage.

These universalistic claims appear to take little or no account of the diversity of societies. If diversity is acknowledged and valued then it follows that it is unlikely that there will be a universal information society. Rather there are diverse mediated environments just as there were diverse instantiations of the industrial age (Mansell 2009, 2002). It is a fallacy to think in terms of a "catch-up" process where digital divides are closed, yielding global and local harmony within the information society. Therefore, we need to examine specifically who is being included, on what terms, and, crucially, who is not and what means we have to alter this condition.

A close investigation of whose narratives about ICTs and information societies or knowledge societies are being validated is required. We need investigations of who is participating in decisions about ICT design and deployment with a view to understanding their values so as to reveal the contested political foundations of these developments. Considering these issues in historical and political perspective is very likely to show that, whatever the shifts in power in society accompanying the diffusion of ICTs are, they are partial and temporary. They do, however, provide us with focal points for a material investigation of the contested practices and values that are embedded within our new mediated forms and structures of control.

<H1>Notes</H1>

1. Some parts of this chapter were presented in a plenary lecture for SwissGIS 10 Years After—The Future of the Global Information Society, Zurich, November 6, 2009; and in a presentation to the Swedish Presidency High Level Conference "Visby Agenda: Creating Impact for an eUnion," November 9–10, 2009, Visby Sweden, and in Mansell et al. (2007).

2. For historical studies, see Braudel (1984), Castells (1996), Freeman and Soete (1997), Innis (1950, 1951), Marvin (1988), and Mattelart (1996/2000).

3. My purpose is not to set out that body of work in this chapter. The interested reader might start with Castells (2009).

4. For research in this tradition see, for example, Attewell (1992), Brancheau and Wetherbe (1990), Carter et al. (2001), Chin and Marcolin (2001), Deroian (2002), Fichman and Kemerer (1999), Lyytinen and Damsgaard (2001), and Stoneman (2002).

5. See, for example, Lamberton (1971, 2006) on the variety of roles that information plays in the economy, Noam (2001) on the institutional rules governing the development of new markets, and Quah (2003) on the potential of ICTs for creating digital goods such as digital music and novel software algorithms.

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