

Introduction

The Social Shaping and Consequences of ICTs

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As this is being written, 'new media' is a buzzword, shorthand for a volatile cultural and technology industry that includes multimedia, entertainment and e-commerce. However, in social research the term has a long history, having been used since the 1960s and 1970s by investigators studying the forms, uses and implications of information and communication technologies (ICTs) (e.g. Parker, 1970a; 1973b; Parker and Dunn, 1972). As our contributor and International Advisory Board member Ron Rice pointed out in his foundational collection, *The New Media* (1984), behind the usual meaning of gadgets and trends lie multilayered relationships among economic, political, behavioural, cultural and institutional as well as technological phenomena. Social researchers, critics, historians and designers have all sought to understand them.

A quick visit to a bookstore (online or 'live') immediately reveals the scatter of new-media-related research and scholarship across what are often Balkanized literatures. Any new research front, especially one that is 'transdisciplinary', undergoes an initial period of exploration and expansion. Scholars ask new questions, gather data that is often hard to characterize or manage, and borrow or invent all sorts of frameworks and models in attempts to speak meaningfully about what they find. The sheer diversity and proliferation can be exhilarating and liberating -- and difficult to comprehend. Eventually, the pendulum swings back toward synthesis and efforts are made to find common threads or themes.

The present volume was conceived as a move in this direction for new media studies. However, our

goal is not to create fixed boundaries for the area, to dictate a canonical literature, or even to argue for a single coherent speciality. Rather, we believe that the continuing openness of new media research, after decades of growth and diversity, continues to be one of its most compelling and productive strengths. Its transdisciplinary goals and structure are entirely appropriate at this moment in Western intellectual history, though they may pose challenges to institutional and disciplinary conventions that are closer to the nineteenth century than the twenty-first.

In this volume, we have attempted to identify major research areas where substantial or influential work has already been done, and to suggest parallel themes or concerns that have surfaced within and among them. Our aim is to deal with the scatter by encouraging, for example, economists of information or technology to consider identity and gender as they are understood in cultural studies; by asking cultural historians to look at the psychology of media use; by persuading sociologists of social change to think about regulatory regimes; and by leading system designers to think about human geography.

Of course, to some extent this strategy only highlights a familiar fact of life for new media scholars: regardless of their disciplinary training or affiliations (ours happen to be in communication and information studies and in social psychology, respectively), we must read and engage across multiple disciplines, whether scientific or humanist, interpretive or empirical. It is difficult, but essential, to be able to look across terminologies,

descriptive and explanatory tools, illustrative cases, even assumptions about everyday life. (Happily, an outstanding synthesis like Castells' *Information Age* trilogy or Luhmann's *Social Systems* does occasionally arrive.) The task can be particularly fearsome for students or colleagues who are new to the area, and we have tried to keep these readers in mind as we organized the *Handbook*.

Given the pervasiveness and significance of media and communication technologies in contemporary society it may be surprising that no single volume has yet attempted to draw together the principal strands of research and scholarship that comprise the best current understanding of the relationship between new media and society. Certainly, the chapters and reference lists in this book testify that a huge body of relevant work has been published, particularly over the last 20 years. In the last five years alone perhaps a dozen new scholarly journals on the topic have been launched as venues for publishing research from many disciplines. And by the late 1990s, new media programmes and faculty could be found throughout the world.

Though the speciality dates back several decades, only in the 1990s was there a major impetus for dramatic expansion in the field. In many ways the recent growth of new media studies has coincided with that of the Internet, though of course it is by no means the only significant new media technology. Since the 1970s, when the first 'personal computers' were introduced and the ARPANET was built as an elite channel for technical communication, the Internet has become a platform for commerce, sociality and popular culture. At the same time, new media research has expanded from a handful of specialists in telecommunications regulation and policy, small-group processes, social network analysis, the social psychology of computing and media, organizational communication and 'man-machine studies' to become a major focus of research and scholarship in its own right. Only lately have large numbers of scholars been drawn to the field, creating the need for a collection like this one which draws together so many diverse developments and identifies key themes and challenges for future research.

Therefore, in this introductory chapter we do several things to help frame contemporary social research and scholarship on new media as it is represented in the following chapters. First, we trace the research projects, problems and intellectual traditions that informed and set the stage for the beginnings of new media research. Second, we propose a definition for new media that acknowledges these early influences as well as the evolution of the field over the last couple of decades. Third, we identify and discuss several important characteristics that distinguish the 'social shaping and consequences' of new media. And fourth, we review

some continuing issues and new developments in the methodology of new media research. Obviously, our approach cannot be exhaustive or definitive; instead, we offer observations that suggest the range of possible ways ahead. We end with some observations on the contents and organization of this volume.

EARLY INFLUENCES ON NEW MEDIA RESEARCH

There is, inevitably, some arbitrariness in setting a starting point for any historical review. For new media studies, the problem is compounded because the area has always been multidisciplinary and international, so different fields and specialities have entered the scene at different times in different places.¹ Its early influences include research projects and initiatives that developed outside the mainstream of, or at the intersection among, the major disciplines. Each had its distinct concerns or problematics, or examined particular social phenomena or contexts, so collectively this early body of work tended to be a somewhat scattered response to the innovative information and communication technologies of that era. Nonetheless, many of these projects and studies have had a guiding influence on more recent research, and several of their authors are contributors to, or members of the International Advisory Board for, the present volume. They continue to be cited and would be included in any 'core' bibliography of new media studies (for a more extensive overview, see Lievrouw et al., 2001).

For example, in economics, *Handbook* contributor and Board member Don Lamberton (1971), Kenneth Arrow (1979; 1984), Charles Jonscher (1983) and others worked out important conceptualizations of the economics of information. Their insights about information as an economic good or commodity laid the foundation for new understandings of intellectual property and of the value and significance of 'information work'. Fritz Machlup (1962) and Marc Porat (Porat and Rubin, 1977) conducted some of the first studies that identified and described the extent and significance of information work in the US. In 1978, Simon Nora and Alain Minc, *inspecteurs de finances* for the French government, issued their internationally cited report on the economic significance and challenge of *télématique* for French society (Nora and Minc, 1981 [1978]). Joseph Schumpeter's (1939) theories of 'long waves' of economic development were an important influence on information society theories (Shields and Samarajiva, 1993). *Handbook* Board member Youichi Ito and his collaborators at Keio University based their analysis of *johoka shakai*, or informationalized society, on measurements of the stocks and flows of information in Japan during the 1960s. Their *johoka* index incorporated the amount

of information produced per year, the distribution of communication media, the quality of information activities, and a ratio of information expenditures as a proportion of total expenditures (Ito, 1981). This approach has continued to dominate information society analyses in Japan (Kurisaki and Yanagimachi, 1992).

In sociology, Daniel Bell's (1973) theory of 'post-industrial society' quickly became a point of departure for studies of information technologies and social change, though it was also widely criticized (for example, see Webster in this volume). Anthony Giddens (another of our Board members) analysed the changing perceptions of space and time associated with information technology, and later, media as instruments of social surveillance and control in modern societies (Giddens, 1979; 1984). In an extensive historical study, James Beniger (1986) described the 'control revolution' facilitated by communication technologies from the nineteenth-century industrial era onward.

Social psychology provided many early insights into the uses of ICTs. In the UK, Short et al. (1976) proposed that teleconferencing systems could be evaluated in terms of their 'social presence'. Similarly, Robert Johansen and his colleagues (1979) at the Institute for the Future (near Stanford University) formulated the concept of 'telepresence' based on their studies of meetings conducted via video conferencing technology. At the New Jersey Institute of Technology, Roxanne Hiltz and Murray Turoff (1993 [1978]) conducted one of the earliest studies of interaction among geographically dispersed work groups of scientists and engineers via computer-mediated communication. Lee Sproull, Sara Kiesler and their students and colleagues at Carnegie-Mellon University were among the first to note the effects of the anonymity and 'reduced social context cues' of computer-based messaging, which, they argued, contribute to disinhibited communication and 'flaming' (Kiesler et al., 1984; Sproull and Kiesler, 1991). At the Massachusetts Institute of Technology, Sherry Turkle observed both children and computer science students and faculty learning to program. Her seminal essay, 'Computer as Rorschach' (1980), and her subsequent book, *The Second Self* (1984), introduced the idea that computers are 'projective devices' that allow users to control many aspects of their self-presentation and interaction.

Important work was done by scholars in many other fields, including the political scientist Ithiel de Sola Pool (1977; 1983), telecommunications engineer Colin Cherry (1978 [1957]; 1985) and management expert Thomas J. Allen (1977). However, at the same time, while these other fields and disciplines responded to changes in modes of communication and information technology that they had previously taken for granted, communication

research was also developing, constituting a central plank of new media studies. Indeed, the moment when the mass communication research literature developed an identifiable interest in 'new media' coincided with the breakup of mass media in the 1970s, as broadcasting converged with digital telecommunications, information systems and computing (e.g. Parker, 1973a). Therefore, interest in new media, especially within the communication discipline, was inextricably tied up with the transformation of 'old' mass media from the outset. These transformations were thought to be associated with the evolution of mass society into a service-based 'information society', or alternatively a more differentiated, perhaps fragmented, perhaps more heterarchical, network society.

In this context, some mass media researchers began to redirect their attention to newer technologies and channels that did not fit the conventional 'mass' framework. Such channels, including the telephone, videotex, audio and video teleconferencing, photocopying, facsimile, and computer-mediated communication (CMC) via the fledgling ARPANET and other systems, had been neglected because they did not fit easily into either the mass media or interpersonal/speech communication specialities within communication research (Rogers, 1999). They also lay outside the main theoretical and methodological concerns of other social science and humanities disciplines. Of these technologies, only the telephone had a major presence in the home; researchers often had to study the others within the settings of the universities, government agencies or other large organizations where they were used.

Therefore, and doubtless for reasons to do with the availability of research funding and the 'applied' or 'administrative' nature of the questions being asked (Lazarsfeld, 1941; Melody and Mansell, 1983), many early studies of new media technologies within communication research took a somewhat traditional approach, considering the 'impacts' of new technologies on attitudes, behaviour, organizations, policy and so on. They focused on workers' perceptions of new technologies, the features and functions of different systems, the types of communication or information services that the systems supported, and their 'effects' on work performance and productivity. Policy studies considered the implications of new media for different industry structures and regulatory options, or described changes in employment and occupational structures attributable to the rise of new technologies and 'information industries'. They examined the prospects for extending established frameworks for universal service obligations, cross-subsidies, rate regulation, and decency and privacy laws to new media systems. In short, a broadly administrative response to technological innovation, modelled primarily after the mass communication 'effects'

tradition, came to dominate the field of new media research at an early stage, particularly in the US.

At Stanford University, for example, Edwin Parker and his associates explored the uses of computing for information retrieval and 'information utilities' (Parker 1970b; 1973b). They also studied the effects of new technologies (such as slow-scan television, direct broadcast satellites and telephone systems) on what was then termed 'development communication' (Parker, 1978). Parker, *Handbook* Board member Everett Rogers, and others examined the role of new media technologies in social and economic development, applying diffusion of innovations theory to the provision of social and information services to rural or underserved areas and nations (Parker and Hudson, 1975; Parker and Mohammadi, 1977; Rogers, 1995; see also Heather Hudson's chapter in this volume). In Canada, government initiatives on computer-mediated communication and videotex in the 1970s produced clusters of new media researchers in Quebec and elsewhere. By the early 1980s, the Annenberg School for Communication at the University of Southern California in Los Angeles had become a centre for new media research grounded in the social psychology of telecommunications, organizational communication, and communication law and policy.

The European tradition of new media research took a rather different direction in the beginning, emphasizing a cultural/critical studies approach to media content and industries, on the one hand, and a broadly Marxist political economy of media, on the other.² Just as the different theoretical, philosophical, methodological and political commitments of administrative and critical (or, variously, 'positivist' and 'relativist', or 'quantitative' and 'qualitative') research were being explicitly debated in media and communication research more generally (see e.g. *Ferment in the Field*, 1983), new media research underwent a similar divergence of its own. Eschewing the preference for middle-range theory that characterized administrative research (Boudon, 1991), European scholars on the whole became more critical of new media than their US counterparts (with some exceptions, noted below). They drew upon a variety of social theories, ranging from Bourdieu's analysis of the relation between economy and culture (Bourdieu, 1977 [1972]; 1980) to Foucault's linking of technology to the administrative imperatives, standardization processes and procedures of bureaucratic organization (Foucault, 1970 [1966]; 1980). Social theories of modernity and social change, including Bell's post-industrial society, Habermas' theory of the public sphere and Giddens' theory of structuration, also inspired new theoretical approaches that connected new media technologies to the co-determination of social structure and action.

British media studies, for example, took an explicitly cultural/critical approach to new media,

as they had to mass media previously. Raymond Williams (1974) was a key figure in this tradition, not only in establishing a critical approach to the mass media, contextualizing them in relation to both political economy and cultural analysis, but also in developing the relation between studies of mass communication and the study of technology and technological innovation. This perspective carried over into early studies of new media content and industry structure in the UK and Europe and has, more recently, also stimulated the study of the social and cultural contexts of ICT consumption and use (Silverstone and Hirsch, 1992; Jouet, 1994; Miller and Slater, 2000).

The political economy of media was another significant influence in European (and later, in North American) new media studies, especially during the 1980s as critics mounted a response to post-industrialism and the popular vision of the 'information society' promulgated by industry and government. As argued by *Handbook* contributor Frank Webster and Kevin Robins (Robins and Webster, 1985; Webster, 1995; Webster and Robins, 1986; 1989) and Nicholas Garnham (1986; 1990; 1994), among others, new media systems and services tend to reinforce the economic and political power of existing systems and institutions. In effect, they argued, the information society is the latest stage of industrial capitalism, not a radical departure from the past.

This critique of the cultural, economic and political power of mass media was advanced forcefully by a number of European scholars, including *Handbook* Board members Armand Mattelart in France, and Cees Hamelink, Tapio Varis and Osmo Wiio in Finland. It was also well represented in North America by the late Herb Schiller and his colleagues at the University of California, San Diego (Schiller, 1981), George Gerbner at the University of Pennsylvania's Annenberg School for Communication, and Dallas Smythe and his research group at Simon Fraser University in Canada. Their colleagues and students (including several of the contributors to this volume) carried the critical perspective forward to studies of new media content, ownership structures and technology development (see e.g. Mosco, 1982; 1996; D. Schiller, 1982; Slack and Fejes, 1987; Gandy, 1993).

These and related perspectives provided the key framework for the development of new media research in the UK. Central to this development was the decision, in 1985, of the Economic and Social Research Council to provide ten years of funding for the first coordinated research Programme on Information and Communication Technologies (PICT) (which was succeeded by the Virtual Society? Programme headed by *Handbook* Board member Steve Woolgar at Brunel University). This multimillion-pound research programme not only served to make visible the

various strands of research on new media already developed in the UK, but also drew on a wide array of academic disciplines to establish what has become a burgeoning tradition of new media research in the UK. Combining critical and empirical approaches, the PICT legacy in particular is that of an active, policy-oriented research community committed to a broadly 'social shaping' position, concerned to understand and critique how governments, regions, organizations and households are shaping as well as being shaped by technological developments in the field of new media (for an overview of PICT-related research, see the edited volume by our Board member Bill Dutton, 1996).

While some observers have asked how far mass communication theory can be extended to the new media (e.g. McQuail, 1986; Morris and Ogan, 1996), the effects-type approach is still found in new media research in many countries (e.g. Lea, 1992; Reeves and Nass, 1996). Today, however, it is balanced by more complex levels of analysis and a more critical perspective that locate the changing perceptions and practices surrounding new media within a broader institutional, economic and cultural context.

Nonetheless, there are some 'blind spots'. For example, international and comparative studies are still relatively scarce. The new media research traditions of non-Western countries remain less familiar to, and so less influential for, the largely English-language scholars and literature we have traced here. It is fair to say that, until very recently, rather more comparative literature has been produced concerning traditional mass media (e.g. Blumler et al., 1992; Chaffee and Chu, 1992; Lull, 1988) than new media, though there are notable exceptions (such as George Barnett's world-systems theory approach to international telephone uses and networks: Barnett and Choi, 1995; Barnett and Salisbury, 1996). Several major international bodies, such as UNESCO, OECD and the European Commission, collate national- and regional-level data that are used in comparative studies (UNESCO, 2000; see also Urey in this volume).

In part, this limited 'internationalization' of the field reflects the flows and connections among research communities cross-nationally. It demonstrates that new media themselves have developed and diffused according to different time-scales in different places, which is largely though not exclusively a matter of economics. Only recently, for instance, since 'Europe' expanded its borders after 1989, has there been research on new media within the context of ex-Soviet countries (Lengel, 2000). Within Europe in particular, however, pan-European work has burgeoned, stimulated by the increasingly unified European economic and policy community (e.g. McQuail et al., 1986; Tydeman and Kelm, 1986; Becker and Schoenbach, 1989; Robins and Morley, 1989; Schultz, 1992; Livingstone

and Bovill, 2001). This policy-oriented research, which is informed by Habermas' theory of the public sphere in particular, reflects a formative trend in new media research at both the national and pan-European level, and contrasts with a great deal of US policy research. It has arisen in response to a growing sense that the strong public service tradition in European media is being undermined by changes within the European media environment (Ferguson, 1986; Burgelman, 1997; Calabrese and Burgelman, 1999).

As new media research has progressed from its early efforts to its recent proliferation in the 1990s, it has become more specialized; some of that variety is illustrated by the diverse chapters that follow. However, today this drift toward specialization is being challenged by broader developments in social theory. For example, as sociologists, political scientists, economists and others debate phenomena like globalization (e.g. Beck, Giddens, Luhmann), they often assume but rarely focus on or theorize the central role of ICTs in these hotly contested, incompletely global transformations in politics, economics and culture. Today, new media researchers face the new and important challenge of making their concepts, arguments and findings count, and having their theories and methods taken seriously, in this wider playing field.

WHAT IS/ARE NEW MEDIA?

The thumbnail history outlined above provides a sense of just how many points of entry there have been to new media research, and the many ways in which new media might be defined. The field needs a definition that is abstract enough to accommodate the range of systems, contents, issues and settings that researchers consider essential, yet not so broad that new media cannot be distinguished from other established areas within communication research and other disciplines.

At the risk of oversimplification, we can say that researchers concerned with technological, economic, or behavioural issues have tended to define new media in terms of system features and services, industry structures and ownership, or the psychology of media users, respectively. Critical/cultural scholars, following the media studies tradition, have drawn more on definitions based on new media content and its forms.

Undoubtedly, most definitions of new media and ICTs to date have focused on their technological features. Wilbur Schramm (1977) classified communication media on the basis of channel characteristics that parallel human sensory perception, such as motion versus still visuals, sound versus silent, text versus picture, or one-way (simplex) versus two-way (duplex) transmission.

He distinguished between inexpensive, small-scale 'little media' and 'big media' with large, complex, expensive infrastructures and organizational arrangements. Ithiel de Sola Pool, a political scientist and pioneer of new media research, defined *new communications technologies* as 'shorthand for about 25 main devices', which he duly listed (Pool, 1990: 19). Other definitions of new media technology have taken a similar classificatory approach (Durlak, 1987; Steuer, 1995).

Ron Rice stressed the two-way capabilities of computing and telecommunications, and defined new media as 'those communication technologies, typically involving computer capabilities (micro-processor or mainframe), that allow or facilitate interactivity among users or between users and information' (Rice and Associates, 1984: 35). The demassified, time-shifting features of new media have been contrasted with the one-to-many, one-way message flows of traditional mass media (Rogers, 1986). More recently, writers have emphasized the convergence of computing and telecommunications technologies (Baldwin et al., 1996). Studies of human-computer interaction and interface design focus on system features that affect the perceptions and cognitive 'human factors' of technology users (Reeves and Nass, 1996).

Consistent with this orientation toward system features, user perceptions and the mass media effects tradition in US communication research (especially the Shannon-Weaver linear model of communication that includes channel as a variable in the communication process), early studies of new media tended toward technological determinism. They emphasized the effects or 'impacts' of ICTs on users, organizations and societies. Technological determinism – the belief that technologies have an overwhelming and inevitable power to drive human actions and social change – is often taken for granted in technologically advanced societies. The opposing 'social shaping of technology' approach (see Lievrouw in this volume) contends that technologies are continuously remade by the things users do with them. Some technologies certainly constrain action, but people can always make choices about using them.

While many new media scholars today have developed a view of technology that is closer to the social shaping perspective, and despite the somewhat relentless critique of technological determinism over the last two decades, the language of 'impacts' persists (Smith and Marx, 1994; MacKenzie and Wajcman, 1999; Kling, 1999). For example, an article in the 1992 *Annual Review of Information Science and Technology* was entitled 'The impact of information technology on the individual' (Palmquist, 1992). A forthcoming special issue of the *Journal of Broadcasting and Electronic Media* is planned on new media 'impacts' in broadcasting. Yet, as Raymond Williams (1974)

forcefully pointed out, the link between technological determinism and narratives of progress (or, less commonly, narratives of decline) – narratives which cast science (typically allied to commercial imperatives) as the driver of not only technological innovation but also social change, with 'improvements' in technology becoming readily aligned with 'progress' in society – can be misleading or even dangerous.

For example, as several of our contributors point out, the Internet is popularly portrayed as a single medium which sprung fully formed into our lives less than a decade ago. However, this is misleading in two senses. First, 'the Internet' is shorthand for a bundle of different media and modalities – e-mail, websites, newsgroups, e-commerce and so forth – that make it perhaps the most complex and plural of the electronic media yet invented. Second, these different modes have their own communication characteristics, are subject to differing economic and social conditions of use and, significantly, have different histories stretching back over several decades. Clearly, these differences must be accounted for; they undermine any possibility of identifying singular impacts or effects because the (plural) meanings and consequences of the Internet are contingent on a wide range of specific historical and cultural conditions.

The dangers of defining communication media in terms of system features or 'impacts' are also illustrated by recent debates in American media law and regulation. Traditionally, media systems have been regulated in the US according to their technological configurations or infrastructures. Speech and publishing are largely unregulated (that is, their content cannot be censored) because historically those forms of communication are protected under the First Amendment of the US Constitution (though exceptions include pornography, libel and defamation, and speech that incites violence). First Amendment protection has been extended to other recording media as well, such as photography, film, audio and video, on the grounds that they too constitute 'speech'.

The American telephone system (essentially AT&T and a few smaller operators), in contrast, was regulated under the Communications Act of 1934 as a 'common carrier', a concept borrowed from transportation law. The common carrier metaphor suggested that because the telephone system was a natural monopoly, AT&T should be required to serve any customers who were willing to pay, without regard for the content of their messages. Broadcasting was also regulated under the 1936 Act because the 'airwaves' (like water, perhaps) were a scarce resource that should be rationed because there were fewer radio (and later, television) frequencies available than broadcasters who wanted to use them. Broadcast licences were awarded to owners of radio and television stations whose programmes would serve the 'public

interest, convenience and necessity' – and could be revoked if licensees aired material that did not meet this deliberately vague requirement.

Today technological convergence has blurred these channel-based metaphors – speech, transportation, airwaves – with serious consequences for the regulatory schemes that invoke them (First Amendment, common carriage, licensing). For example, though American Internet users often assume that they have First Amendment speech rights online, or expect the same level of privacy that they have for telephone calls, Internet service providers insist that they are entitled to intercept, read and censor any messages that pass through their systems because they may be held financially and legally liable for those communications. Employees who might reasonably assume that their books, papers and other print materials are safe from 'unreasonable search and seizure' find that similar privacy protections do not always extend to computer disks or hard drives. 'Content providers' like newspaper and book publishers, movie studios, and record companies, on the other hand, maintain that they should have the same rights of expression (and property rights) online as they do in print or on film. In response to recent technological developments and pressures from the media industries, the US Telecommunications Act of 1996 rolled back or weakened many of the rules of the 1934 Act. These include restrictions on cross-ownership of broadcast and publishing media, and the number of outlets that a single owner may have in a given market. While the 1996 Act does not solve all of the regulatory or equity problems of new media, the current regulatory climate shows that it is obviously becoming more difficult to distinguish among media, or to regulate them, on the basis of system features or technology alone.

Beyond Features

No wonder, then, that contemporary discussions of new media have begun to incorporate more than technological characteristics. For the inaugural issue of the journal *New Media & Society* (What's New about New Media?, 1999), editors asked several scholars (including one of the present authors) to respond to the question: what is 'new' about new media? What distinguishes them from other media, either technologically or socially? Some contributors mentioned channel characteristics or features like those reviewed above, or commented on the historical problem of labelling any technology as 'new' by definition. But others pointed out that new technologies give users an unprecedented ability to modify and redistribute content – contributing to what *Handbook* Part Six editor Mark Poster called the 'underdetermination' of new media in comparison with traditional media. Rakow suggested that media research has not yet come

to terms with the fact that new media allow any user to 'speak', an issue echoed by Sonia Livingstone's call for a reconceptualization of the notion of audience.

Kevin Robins, reviewing the recent work of Pierre Lévy, agreed that new media have produced a new kind of 'knowledge space' or 'communication space' that is 'de-referentialized', that is, disconnected from local, situated knowledge and experience. But unlike Lévy, who sees this development as an emancipatory break from older forms of knowledge that were linear, hierarchical and rigid, Robins argued that the new 'relation to knowledge' serves to further global corporate capitalism and the interests of a relatively small elite. In this environment, information and communication are valued not for their substance or meaning, but for their capacity to be processed, circulated, or connected for their own sake: 'contemporary knowledge culture is regarded as essentially about the acquisition of generic information skills and competencies' (1999: 20). In the same issue, Bill Melody proposed that new media are 'more influenced by economic factors' and more central to the new information economy than traditional media have been. The high degree of interconnectedness, and the volume of communication and information moving through networks, has created greater economic instability.

Insights like these bring us closer to a framework that more fully captures the rich interweaving of media technology, human action and social structure. While a single definition can hardly capture the variety of ways that the term is used today – or even in this book – we can still propose a framework for thinking about new media that goes beyond simple classification of systems and features. Therefore, by *new media* we mean information and communication technologies and their associated social contexts, incorporating:

- the artifacts or devices that enable and extend our abilities to communicate;
- the communication activities or practices we engage in to develop and use these devices; and
- the social arrangements or organizations that form around the devices and practices.

Together, we can think of the three aspects of media technology as an 'ensemble', in Michel Callon's phrase, or as infrastructure in the sense that Susan Leigh Star and Geof Bowker define it in this volume. The three elements are inextricable and mutually determining.

Clearly, from the viewpoint of this definition, many technologies are infrastructural, in that they combine elements of technology, practice and social organization. So what can we say distinguishes new media as a particular focus of study? Many apparently novel traits of new media have been described, including hyperreality, virtuality, anonymity, interactivity and so on. However, we believe that new

media can be characterized more usefully in terms of, first, the particular ways that they are both the instrument and the product of social shaping, and second, their particular social consequences.

A number of the chapters here make the point that new media technologies both shape, and are shaped by, their social, economic and cultural contexts. More specifically for new media, however, such shaping is *recombinant*. That is, new media systems are products of a continuous hybridization of both existing technologies and innovations in interconnected technical and institutional networks. The recombinant/hybrid metaphor suggests that while ICTs are influenced by the existing technological context, and may have unintended consequences, to a great extent they are the result of human actions and decisions. They are not determined by an independent, inevitable causality or evolutionary process unique to technology itself; rather, designers, users, regulators and others can take advantage of the current state of technical knowledge, and recombine technologies and new knowledge to achieve their particular goals or purposes.

The metaphor also suggests the essentially continuous nature of new media development. Even technologies that are perceived as being unprecedented are found upon closer analysis to have been designed, built and implemented around existing technologies and practices. Change, then, comes in waves or cycles; occasionally, a wave may be of such magnitude that it appears to be a 'revolution' or a complete break with the past, but from a longer perspective it is still part of an ongoing process.

Certainly, some media technologies may work so well, or be adopted so broadly, that they become very stable and resistant to change (for example, the NTSC television broadcast standard in the US). But in the last few decades, the social, political and economic premium placed on innovation, as well as the digitization of different media systems, have tended to push new media technologies toward instability. In this context, hybridization has created an unstable sociotechnical landscape and has compelled researchers to treat systems and their uses as moving targets (for example, the rapid coevolution of technologies and social groups that share audio and video over the Internet). This characteristic was first seen in the technological convergence of traditional media with computing and telecommunications that prompted the early studies within communication research and other fields in the 1960s and 1970s. It also accounts for the persistent sense of 'newness' that has been associated with media systems ever since.

Another specific aspect of social shaping associated with new media is that the point-to-point 'network' has become accepted as the archetypal form of contemporary social and technical organization. Today, the *network metaphor* applies not just to new media technologies, but also to the

patterns of social relations and organizing and the institutional formations associated with them. It can be argued that more traditional mass media technologies, as well as the organizations that employed them and the institutions that governed them, embodied industrial-era notions of social and work organization. For example, though broadcasting was often organized into systems called 'networks', such systems were usually hierarchical. This type of configuration supported the large-scale production and distribution of messages directed from a few media centres (ordinarily, major cities or cultural capitals) to 'mass' audiences. It ensured the smooth and rapid diffusion of information from the 'top' or 'centre' of the hierarchy to the bottom or periphery – and provided little or no capacity for messages going the other way, so-called feedback. As it is understood today, however, the term 'network' denotes a broad, multiplex interconnection in which many points or 'nodes' (persons, groups, machines, collections of information, organizations) are embedded. Links among nodes may be created or abandoned on an as-needed basis at any location in the system, and any node can be either a sender or a receiver of messages – or both.

Certainly, high-tech firms, including new media services, tend to congregate in particular geographic places (the 'clusters' discussed by Cooke in this volume), and the network topographies of telecommunications, computing and media are far from evenly distributed around the world, or even across regions. But these hubs and regions do not necessarily dominate new media content as a few major cities and cultural centres did for mass media. New kinds of 'spaces and places' for sociality and culture have been created (see Curry in this volume), as systems like the Internet have been designed specifically to allow any node to connect to any other with network access. This architecture was introduced with the telephone system (and to a lesser extent, by the telegraph system before that), and it is both physically and qualitatively different from the 'networks' of broadcasting and print. Indeed, economists and others first recognized that the positive 'network externalities' associated with the telephone system were different in kind from the economies of scale of broadcasting or print. The larger the network, the more valuable it becomes to every additional new user, as each user gains the advantage of links to more potential respondents and sources of information.

Not only are new media shaped in characteristic ways; they also have distinctive social consequences. Perhaps the most obvious, one that has been commented on since the days of McLuhan, is the *ubiquity* of new media. Though not every individual in a society may use (or indeed have access to) new media technologies, we can say they are ubiquitous because they affect everyone in the societies where they are employed. The reach of

ICTs extends far beyond the obvious arenas of entertainment and the workplace. Banking systems, utilities, education, law enforcement, military defence, health care and politics, for example, are all dependent on extensive ICT systems for record-keeping, monitoring and transmitting information – activities that affect anyone who deals with these services or activities.

The sense of ubiquity underlies several major issues that are discussed in the chapters that follow. For example, though ubiquity might be assumed, new technologies and the resources to use them are not distributed evenly or fairly, as evidenced by the flurry of research and news coverage about the ‘digital divide’ in the late 1990s (see Gandy, and Hudson, in this volume). By the same token, any system with pervasive reach and influence prompts questions about the control of the system and the power and cultural influence it affords those who are in control; new media systems are no exception. And while the relationship among media messages, public opinion and political participation has been studied extensively, the Internet and other new media technologies have presented new arenas for discourse that challenge the definition and understanding of the public sphere and what constitutes political action (see Bentivegna, and Luke, in this volume).

Another consequence of new media is the sense of *interactivity* that they convey to users. Interactivity is the main topic of the chapter by Sally McMillan in this volume, and is discussed in the introduction to Part Two. Briefly, however, we can say that because switching is a pivotal part of new media systems, they afford users more selectivity in their choices of information sources and interactions with other people. Communication researchers have known for decades that mass media audiences attend to, perceive and retain information selectively. Yet new media also give users the means to generate, seek and share content selectively, and to interact with other individuals and groups, on a scale that was impractical with traditional mass media. This selectivity accounts for much of the sense of interactivity or social presence associated with new media, as well as their ‘demassified’, or individualized, targeted quality. In turn, the sheer proliferation and diversity of content and sources now available have raised concerns about the quality of the content (for example, its authenticity or reliability), as well as questions about the nature of online experience and interaction (for example, about anonymity or identity of participants in online interaction).

NEW MEDIA, NEW METHODS?

Because the *Handbook* is organized around major substantive areas of research and scholarship, we

have not dedicated a chapter specifically to the methodology of new media research. However, new media studies pose a number of empirical and analytical challenges that merit a brief discussion here.

The chapters in this volume represent a significant collation of past and current empirical research, as well as conceptual frameworks for analysing new media in relation to their social shaping and social consequences. While the field abounds with new and pressing research questions, only recently has attention been paid to the methods by which these are being addressed. Beyond the challenges posed by the multidisciplinary nature of the field, which results in often conflicting conventions underpinning the conduct and evaluation of empirical research, *Handbook* readers may discern two broad methodological issues. First, do new media require new methods to observe and study them? Second, how does empirical research contribute to the shaping and consequences of the new media being studied?

In response to the first issue, and as is evident from the recent bounty of books and articles addressing the conduct of empirical media research, and new media research in particular, two positions have emerged. The first presumes, at least implicitly, that media research rests on the same, well-established methods as any other area of social science (or humanities). In relation to the new media, therefore, the use of surveys, interviews, case studies, observation, textual analysis and so forth is considered to be ‘business as usual’. Those adopting this position would argue that in new media research as elsewhere (perhaps even more so here, given the rush to produce findings before they go out of date), traditional standards of reliability, validity, generalizability and so forth are crucial to the evaluation of good research (e.g. Webster in this volume). This is perhaps the most common perspective, and is clearly laid out in the well-used textbook by Williams et al. (1988). Similarly, Deacon et al. (1999) deal with the Internet solely as a new source of information for media and communication researchers. They offer guidelines to its effective use as a knowledge resource, but say little about it as a subject of empirical research in its own right.

The contrasting position tends to draw primarily on a qualitative or ethnographic tradition (e.g. Hine, 2000), arguing that traditional methods must be changed both conceptually and procedurally. To the extent that new media generally, and virtual environments in particular, challenge key concepts of media research – authority and power, production and consumption, community and identity, and so forth – then research must frame and operationalize its questions (and answers) in different ways (Lyman and Wakeford, 1999). So too, again particularly for virtual environments, many guidelines, practices and evaluative criteria regarding, for

example, research ethics, the nature of naturalistic/unobtrusive versus participant observation, or criteria for survey sampling and evaluating response rates, must be reformulated (Mann and Stewart, 2000).

The second broad methodological consideration concerns the social uses of new media research. It will be apparent in many of the chapters that follow that a major research strategy is to track what are, in effect, real-world experiments, in which new communication infrastructures and changing social phenomena are observed. From these experiments, we can infer early indications of the likely future 'impacts' of these new media and see the social shaping of technology itself, occurring through a path-dependent process of technological change in which contingent histories of adoption matter (see Lievrouw in this volume).

However, because the media being observed are often new or provisional, the research itself may affect the course of its design, implementation or use more than it might for older media, which are more stable and where a critical or neutral distance is more readily sustainable. MacKenzie and Wajcman observe that 'the very process of adoption tends to improve the performance of those technologies that are adopted' (1999: 19); by the same token, researchers must also acknowledge that studies of this adoption feed back into the design process itself. In other words, in so far as new media technologies are shaped not only in the rarefied world of design and innovation but also through their early history of adoption and everyday use, such experiments, and the research that accompanies and assesses them, play a role in the social shaping and social consequences of new media.

Researchers vary in their response to this situation. For many, 'it would be an unforgivable dereliction of the responsibilities of intellectuals if the potentials offered by current developments were not fully explored, and a concerted effort made to shape their direction to bring about at least some of the much talked about utopian visions of communication in the electronic age' (Kress, 1998: 79; see also Biocca, 1993). For others, a critical distance between the researcher and the new media phenomena being researched is crucial to the independence of the research findings.

The very pace of change – both technological and social – poses a challenge to new media research. In other words, the field is in flux, not so much because it is new (indeed, it is at least 20 years old) but because the object of study itself and its social contexts have never been – nor are they likely to become – stable. Researchers working in the area must tolerate ambiguity and be comfortable with the study of moving targets. At the same time, anticipating the future significance of the new media is hazardous in the extreme. Boddy (1985) notes some of the widespread misconceptions, within both public

and industry circles, that existed at the time of television's arrival as a mass medium. Many observers failed to anticipate the success of television in dominating culture, information, lifestyles and, more arguably perhaps, public and political life in the second half of the twentieth century. Interestingly, in his highly influential book *Television: Technology and Cultural Form*, Raymond Williams (1974) had similar difficulties with prediction. He conceptualized new technologies primarily in terms of the transformation of television; despite his considerable perspicience, he did not anticipate the convergence between broadcasting, telecommunication and, especially, information technology.

We might end this section with a note on terminology. In researching new media, some of the terms from mass media research still apply – production, media institution, design – though they are undoubtedly more complex and less fixed than hitherto. Other terms, however, apply less well. *Text* is one, as new media exploit the intertextual or transtextual (Drotner, 1992), as the meanings conveyed by new media result from an interactive engagement between producers and consumers, and as the texts are mutable, transformed through processes of relocation, transmission, and recombination.

Even more problematically perhaps, there is an uncertainty over how to label people in terms of their relationship with new media. The term *audience*, which was and to some extent still is satisfactory for mass media research, fits poorly within the domain of new media. In a number of important ways, audiences are becoming 'users'. Analytically, audiences are being relocated away from the screen, their activities contextualized into the everyday life-world. They are also becoming users because they are grappling with the meaning of new and unfamiliar media objects (i.e. as technologies, or consumer goods), and this not only in their homes but also in schools and workplaces. Further, they are becoming users because new media and information technologies open up new, more active modes of engagement with media – *playing* computer games, *surfing* the web, *searching* databases, *responding* to e-mail, *visiting* a chat room, *shopping* online and so on. Etymologically, the term 'audience' only satisfactorily covers the activities of listening and watching (though even this has been expanded to include the activities which contextualize listening and viewing). But the term 'user', despite its problematic histories (e.g. in uses and gratifications research, or its instrumental connotations in technology-driven studies of information retrieval, interface design and 'human factors', which suggest that users of media technologies differ little from users of washing machines or cars), better covers this variety of modes of engagement.

What is significant about people's uses of new media remains, in many ways, what was also

significant about audiences for traditional media: that is, the extent to which media engagement is necessary for a common culture, for shared community values or, conversely, the extent to which media engagement undermines, fragments, manipulates or exploits people collectively (as publics, markets, nations and so on). In this sense, the term 'audience' is still appropriate. But grammatically it is awkward, as are 'communicators', 'consumers' or 'users'. One can only conclude, as do the authors of the chapters included here, that no one term can be expected to cover the variety of significant relationships which now exist between people and the media. Perhaps most important is that we use the array of available terms with care, and not lose sight of the observation that has become a consensus among audience researchers (Livingstone, 1999), that the nature of the relationship, rather than the artificial creation of a reified entity (audience, user, consumer), is most central to the analysis of new media and their social consequences. To focus on the relationship also serves to locate this relationship in a social context, for people are, first and foremost, workers, business people, parents, teachers, friends – thoroughly embedded social roles which precede their status as 'users' or 'audiences'.

OVERVIEW OF THIS VOLUME

In putting together this book, we have stressed research on socially situated technologies, and on studies that document circumstances where strong cultural concerns or social norms have developed around ICTs. As its subtitle suggests, the social contexts and uses of new media are as important as the technologies themselves. 'Social shaping' and 'consequences' suggest the evolving, dynamic nature of the systems and their related issues, as well as major approaches to research in the area. On the one hand, there is a concern with agency and action; on the other, a concern with social effects, structure and impacts. While the *Handbook* attempts to cover the field as comprehensively as is practical, no single approach can be said to characterize the whole work, though certain sections may illustrate widely held perspectives.

Overall, one principal purpose of this volume is to lay out the present boundaries of new media research so as to allow a clear view of the current state of the art. We agree that 'as new fields evolve, there are periodic attempts to take stock of what's happened so far, how things are going, and what still needs to be done' (Johansen, 1984). Consequently, the emphasis throughout the chapters that follow is on documenting the most significant social research findings and insights in areas where a substantial amount of work has already been accomplished, rather than on speculations about

future technological directions or scenarios. Thus, one ambition of the *Handbook*, prosaically but perhaps most usefully, is that it sets out to draw together in a single place the key resources and trends among the rapidly diversifying variety of new media research. The goal is to make visible and readily accessible work which has already been conducted but which may not be familiar to specialists in particular disciplines. In some domains, the stress is on consolidating and building on significant contributions already made within the field, while in others it seems more important to incorporate key ideas and approaches from outside, given the interdisciplinary nature of new media research.

Although the field of new media studies generally is highly multidisciplinary, undoubtedly different specializations draw particularly on some disciplinary literatures, as the book parts demonstrate. Hence, Part One, concerned with locating new media within the changing social landscape, draws mainly on sociological, social psychological and political science traditions. In Part Two, science and technology studies, information science and communication research come to the fore. Part Three integrates organization studies, management and organizational communication in its analysis of how new media fit into, or transform, organizations. By contrast, Part Four, centred on the fast-moving and often nationally specific field of new media policy and regulation, makes use of legal perspectives as well as those of political economy. The latter perspective is important also in the more economically oriented Part Five, which is concerned with new media industries and markets. Finally, Part Six draws perhaps most broadly on developments in social theory, philosophy, sociology and the humanities in its aim of mapping a cultural approach to the new media.

A more ambitious aim than that of collating new media research is that of facilitating the identification of key themes and debates which have thus far framed the major contours of new media research, in order to support both critical perspectives on research and the development of future research projects. Hence we have invited chapter authors to identify not only major trends but also problematic claims or assumptions, remaining gaps in the research record, and new domains to be explored. In such future developments it is our hope that researchers from different disciplines and perspectives will not only converge productively on the problematics of new media shaping and consequences, but also take back these perspectives into their home disciplines. For it seems that, at least until very recently, little new-media- or ICT-related research has found its way into the most prestigious, core or mainstream journals in communication research, sociology, social psychology, education, law, economics or political science.

New media research spans not only multiple disciplines but also many countries. Yet, as already noted, it has proved more challenging than anticipated, and perhaps we have been less successful than we had hoped in achieving a multinational coverage of new media research. Research communities tend to be national in orientation, addressing national policy developments, responsive to national funding sources in particular economic and cultural contexts, and networked within distinct linguistic and intellectual traditions. While we are aware of the advantages of learning from comparative research, to some extent, the challenges of developing a comparative overview in the field of new media remain for the future.

Therefore, we offer the *Handbook of New Media* as one in what we hope will be a series of useful surveys and syntheses of new media studies, as more questions are asked, as more comprehensive and creative answers are found, and as the field and its influence continue to grow.

NOTES

1 For a longer historical perspective, bearing in mind that all media were once 'new' and gave rise to various hopes and anxieties, readers are encouraged to review the opening chapter of Rice and Associates (1984) as well as several histories of media technologies that have informed the field, including books by Jim Beniger (1986), James Carey (1989), Claude Fischer (1992), Patrice Flichy, (1995 [1991]), Carolyn Marvin (1988) and, more recently, Brian Winston (1996), as well as the edited collection by Chandler and Cortada (2000).

2 This dichotomy is well summarized in the introduction to a collection of key articles from the journal *Media, Culture & Society* (Collins et al., 1986).

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