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ARTICLE

New media and the 'pluralization of life-worlds'

A role for information in social differentiation

LEAH A. LIEVROUW
University of California, Los Angeles

Abstract

This article asks whether, and in what ways, new media technologies contribute to variations in information resources and communication relations from place to place that may encourage social integration or differentiation. Current perspectives on differentiation theory are briefly discussed, and a model is presented which suggests how the generation, circulation and use of information in society create different social milieux or information environments. Recent studies of new media use are used to illustrate how ICTs might contribute to social differentiation.

Key words

heterotopic communication • ICTs and sociality •
information environment • information seeking •
neofunctionalism • network society • social change • social
differentiation • social movements

. . . it is the very pluralization of life-worlds, not their colonization, that creates the distinctive opportunities and pathologies of modern life.
(Alexander, 1990a: 12)

Recently, a wide-ranging scholarly and popular commentary has grown up around apparent declines in broad-based social participation, especially in the USA and other developed nations (Putnam, 2000). Some writers worry that whatever sense of a public sphere or civil society that existed in the past is giving way to a new *Zeitgeist* of social separatism and mistrust (Bellah et al., 1985; Gitlin, 1995; Hughes, 1993). Others, especially in Europe, see the change as a welcome break from the totalizing political trends of the past and their disastrous consequences, and hail the 1990s as a 'decade without social movements' (Lovink, 2000).

It is notable that this sense of declining civility and participation has developed concurrently with the proliferation and widening adoption of new information and communication technologies (ICTs), particularly the internet and the world wide web. Yet communication media are often assumed by definition to be socially integrating, producing a homogeneous (often American) popular culture depicting a social 'mainstream.' This belief has extended to many discussions of the internet and online community (for example, Jones, 1998; Rheingold, 1993) as well as recent empirical studies (for example, Hampton and Wellman, 1999; Nie and Erbring, 2000).

However, in some ways the social mainstream associated with conventional mass media and pluralist society in developed societies seems to be drying up, just as global media networks are converging with computing, telephony and new wireless technologies into ICT infrastructures with unprecedented reach, speed and bandwidth. Instead of McLuhan's global village, some see the potential for new media technologies to be adapted by countless self-sufficient 'neo-tribes' that need not participate in larger arenas of public discourse or social movements (Lash and Urry, 1994: 317–18). Manuel Castells calls such groups 'sources of resistance to the new global order . . . historically specific societies [that] take their revenge against their domination by global flows' (Castells, 1997: 72).

Clearly, the current period is characterized by rapid transformations in both ICT infrastructures and in social, political and economic organization in virtually every region of the world. However, it is an open question whether the economic and technological centralization imputed in globalization entails corresponding social/cultural integration, or if ICTs might continue to provide a context for social and cultural diversification. This article asks whether, and in what ways, new media technologies contribute to Alexander's 'pluralization of life-worlds' – that is, whether they help produce variations in information resources across places or groups that are reflected in social structure. Elsewhere, I have suggested that ICTs can be used to construct and reinforce separate settings for interaction or subcultures that strictly control entrée, exposure to or interaction with other groups (Lievrouw, 1998). Here, I argue that new technologies may foster social differentiation in contemporary societies.

In the following sections current perspectives on social differentiation, especially within the context of neofunctionalist social theory, are discussed briefly. A model of social 'pluralization' is presented which suggests how the generation, circulation and use of information in society creates different social milieux or *information environments*. Because this article is primarily theoretical, an empirical application of the model is outside the scope of the present discussion. However, the findings of several recent studies of new media use are used to illustrate how ICTs might contribute to social differentiation.

DIFFERENTIATION THEORY REVISITED

The literature on social differentiation is too extensive to be covered in detail here, but a few main points can be noted. Most current views trace their roots to the structural-functionalist theories of Durkheim and especially of Talcott Parsons, which dominated American sociology after the Second World War (Alexander, 1985, 1990a, 1992, 1998; Boyne, 1996; Colomy, 1990; Hamilton, 1996; Münch, 1987; Rothenbuhler, 1987). However, as Alexander (1985: 7) notes, 'It is history that Parsonian sociology, né "functionalism," crashed in the 1960s'. Critics charged that functionalism was inherently conservative, idealist, and biased toward integration, stability and social control. Worse, its macro-level abstractness, rationality and emphasis on value consensus seemed woefully out of touch with the social upheavals of the period. Some current observers consider the original criticisms to be overstated and more of a reaction to the social movements of the 1960s than a fair evaluation of Parsons' contributions (for example, Turner, 1999). Nonetheless, functionalism is still viewed skeptically by many, especially conflict theorists concerned with competing interests and power relations among social groups, and symbolic interactionists examining micro-scale interpersonal interactions.

In 'old functionalism', differentiation is the antecedent to social integration. Differentiation is the process whereby one social structure separates into two or more that share the function of the original entity (Smelser, 1959). It rationalizes or distributes the complex functions of a modern society across many specialized but coordinated groups. It is 'the divisions of labor within the whole' (Boyne, 1996: 195), each part having a function that serves the whole. Differentiation typically takes the form of increased institutional specialization; as societies develop, traditional, comprehensive forms of social control (for example, kinship, religion) give way to more impersonal, specialized and bureaucratic social institutions (Alexander, 1992).

For Parsonians, differentiated social structure reflects patterns of consensually-shared values or norms, and the harmonization of values and functions supports social integration and order. Order and integration are

fundamental themes in functionalism, especially for culturally or ethnically diverse societies: 'For Americans, the central issue to which sociology has always been connected is that of social solidarity' (Hamilton, 1996: 147). Integration is social solidarity or cohesion, 'the internal cooperation of the separate parts with the whole' (Boyne, 1996: 195) and the constitutive force that 'holds social populations and institutions together' (Calhoun, 1992: 205).

By the time of Parsons' death in 1979, functionalism was more or less a closed case. However, a revival of interest in the 1980s and 1990s was motivated particularly by the work of German social theorists like Jürgen Habermas and Niklas Luhmann, and by Jeffrey Alexander and his associates in the USA, who coined the term *neofunctionalism* for the new approach (Alexander, 1985, 1998; Hamilton, 1996). The neofunctionalist perspective sought to maintain the strengths of functionalism while addressing its deficiencies. Alexander (1985: 16) states its agenda simply:

Within a neofunctionalist framework, materialist reference is never separated from culture or personality systems; contingency is related to systemic process; ideological criticism of society occurs within a multifaceted understanding of social differentiation; and thinking about conflict is intertwined with theories of integration and societal solidarity.

Newer theories also recognize the contingent balance between social order and disorder, rather than privileging one or the other. Lechner (1985: 158) explains,

. . . any form of meaningful order must contain tension between 'ordering' and 'disordering' dimensions of action. In any sociocultural setting as well as in symbolic interaction, in institutions as well as in personal biographies, meaning is continually gained as well as lost, complexity continually reduced as well as produced. Meaningful order, in whatever human domain, is an inherently fragile accomplishment.

Neofunctionalist theorizing has thus attempted to account for social change, and for differentiation in particular, by enlisting concepts from self-organizing systems theory (Luhmann, 1982, 1995), conflict theory and interactionism (Münch, 1987) and social network analysis (Calhoun, 1992). These efforts incorporate contingency and help ameliorate functionalism's lack of concrete empirical grounding.

Neofunctionalist writers also emphasize the role of communication media and interaction in social differentiation and integration. Niklas Luhmann suggests that modern society is a 'complex system of communications that has differentiated itself horizontally into a network of interconnected social subsystems' (Knodt, 1995: xii). Calhoun (1991, 1992) observes that new communication technologies, such as computer networks, foster the growth

of indirect social relationships that help to integrate large, complex societies across time and space. Anthony Giddens' structuration theory (1984, 1990) describes the integrating influences of the 'reproduction of social relations' and practices in face-to-face and mediated interactions (Cohen, 1987: 297). Habermas (1989 [1962]) associates the decline of the public sphere with the transformation of local print media into independent (differentiated) economic and social institutions; Alexander (1990b) argues that news media are only able to perform their normative, integrating function when they are free from political, religious or other influence. While few communication researchers have taken a neofunctionalist approach to theory, a notable exception is Eric Rothenbuhler (1987), who argues for a reformulation of uses and gratifications theory along neofunctionalist lines.

Differentiation and new media

Despite its relative sophistication, the neofunctionalist perspective has been slow to find wide acceptance, partly because of its connections to 'old functionalism'. Nonetheless, as work by Luhmann, Calhoun, Rothenbuhler and others indicates, many of its insights are suited to the study of new media and social change. From the standpoint of neofunctionalist differentiation theory, we can ask whether ICTs contribute to or reduce social complexity, whether they influence moves between differentiation and integration, or more generally whether the media infrastructure ramifies larger social sensibilities of difference, incommensurability or conflict, versus sensibilities of similarity, shared interest and cohesion.

Insofar as ICTs are used to support separate social 'spaces' for ethnic, religious or other groups, they may contribute to social fragmentation or a turning away from the integrating forces of modern society. Furthermore, 'Many of the key players shaping the wonders of the new media world have a vested interest in emphasizing differences among people' (Turow, 1997: 196). As early as the 1970s, Turow argues, advertisers recognized the commercial potential of social separatism; eventually, they became 'centrally responsible for images of social division' (Turow, 1997: 194).

Certainly, audiences have always been somewhat selective, seeking sources of information and entertainment that fit their particular needs or interests. 'Niche' media and specialized channels (for example, in publishing, broadcasting and cable/satellite systems) are not new. Indeed, the editors of *The Economist* recently speculated that the AOL/Time Warner merger simply 'brings forward the shift to narrowcasting' (*The Economist*, 2000: 18) as such mergers graft conventional industrial-style structures of content production and consumption onto new media channels and services.

However, pluralist societies typically attempt to balance parochial or local interests with those of the larger society. To some extent mass media act as forces for social integration by delivering general-interest information to a

large proportion of society (that is, the largest possible audience) or by exposing audiences to unfamiliar people and information. They can be powerful shapers of mainstream public opinion and influential agents of social change or stability. And conventional point-to-point media such as the telegraph and telephone, whose infrastructures originally followed surface transportation routes, have played an important historical role in spanning geographic distance and reinforcing the sense of the modern nation-state (Carey, 1989; Fischer, 1992).

Today, the levels of participation in political activities and civic associations in the US (see Putnam, 2000),¹ the weakening ratings and circulation of general-interest media, and the growing use of new media suggest that newer communication channels may play a different social role than mass media did in the past. Mass media have often reflected a social sensibility of integration, common interests, majoritarian politics, broad social movements, mass production and consumption, and so on. Today, new media often convey a sense of distinction, difference, exceptionalism, minority views, local interests, identity or special-interest politics, 'boutique' production and consumption, and so forth.

Theorists have argued that modern societies undergo 'uneven', 'unequal' or 'blunted' differentiation rather than a simple, constant progression toward specialization (Colomy, 1985, 1990), and the media certainly contribute to the uneven landscape. It is reasonable to assume that media systems, like other technologies, are designed and built in ways that reflect and express the prevailing social temperament, including assumptions about interaction, sociality, community, social similarities and differences, the production and distribution of information, and what is known and worth knowing.

INFORMATION ENVIRONMENTS

From a neofunctionalist perspective, then, we can propose that sociality and social structure both shape, and are shaped by, different groups' particular information resources, communication relations and enabling technologies. *Information environments* are social settings or milieux in which these resources, relations and technologies undergo a structuration-type process of change called *informing*. Information and knowledge, institutional formation and interpersonal communication, technology and social action, structure and agency are mutually and recursively shaped; in this sense, environments embody the persisting tension between order and disorder described by Lechner (1985: 158).

Information environments have highly variable contours or topographies: 'People inhabiting nearly the same physical environment can live in very different information environments' (*Web Dictionary of Cybernetics and Systems*, 1999). Moreover, individuals can inhabit several environments at once. They can enter or leave environments (or indeed create new

environments or break down existing ones) as their resources, relationships and technology uses change.

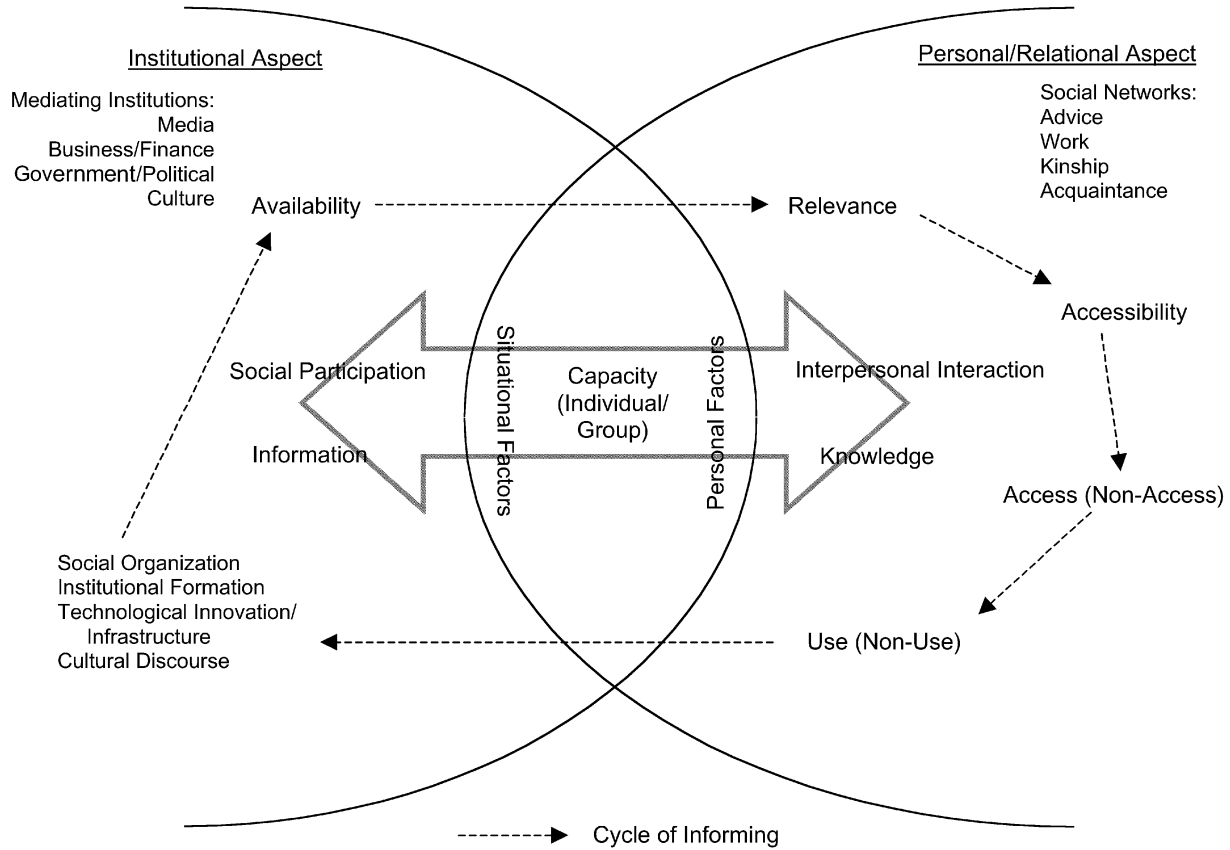
In this framework, communication, knowledge and information are interdependent. *Knowledge* is the state of the 'knower', the 'capacity for social action' which 'enables an actor . . . to set something in motion' (Stehr, 1994: 95).² *Information* is a consequence or product of knowledge in the form of artifacts or expressions (such as documents, conversations, artworks or cultural practices).³ *Communication* – coordinated action that achieves understanding or shares meaning (Rogers and Kincaid, 1981) – is the bridge between knowledge and information.

Though the three are inseparable for practical purposes, information is emphasized here for two reasons. First, information is *organized* relative to a particular context, which makes it intelligible or meaningful (indeed, expressible).⁴ Second, it is *expressed*, which makes it the observable 'marker' or indicator of other tangible and intangible knowledge, communication, social relationships, culture, etc. In the communication process, actors must impose order or structure on what they know to express their knowledge, and on available information to appropriate it as knowledge. This facet of communication – the 'intervention' of the actor between knowledge and information – can be thought of as informing, in the literal sense of giving form, shape or order.

A simple schematic model of an information environment is illustrated in Figure 1. An environment has an *institutional aspect* and a *personal/relational aspect*, which are closely related and interact. In one aspect, mediating institutions (for example, business and finance, government, cultural institutions, and the media) organize key cultural and technological resources to produce and broker information for the community at large. In the other aspect, people create and share knowledge and information with others through smaller-scale interpersonal interaction and information-seeking activities. ICTs can be significant features in both domains.

Both environmental aspects evolve over time. Knowledge and information are mutually created and recreated, shaped and reorganized, in a cycle of informing (indicated by arrows in the figure). Informing may be, but is not necessarily, conscious or rational. Knowledge is often tacitly understood, and knowers are not always able to articulate the ways they bring knowledge to bear on action. Informing is never complete, but is an ongoing process of organization, disorganization and reorganization of knowledge and information recursively.

As an aspect of communication, informing is fundamentally social and interactive.⁵ People in an information environment share what they know and create and use information, both in person and via various media technologies. They produce patterns of social relationships (for example, interpersonal networks, social structures), practices (for example, cultural



• Figure 1 The information environment

expressions, education, politics) and common knowledge (for example, tastes, norms, value systems) that persist and evolve over time. They express, break down and revise their shared understanding(s) in interpersonal, work, kinship, ethnic or advice networks. Indeed, information environments are constituted by people who share a sense of understanding the same things and therefore of belonging together. Environments change or break down when this shared understanding shifts or is lost. The development of more than one set of understandings and relationships may create pressures toward differentiation.

The informing cycle has no particular starting or ending point. However, we can begin with *availability*,⁶ the presence and circulation of information in the environment via personal channels and ICTs. Individuals, groups and institutions can generate information, but mediating or brokering information is a key institutional function. The availability of information affects the environment's character or sensibility, but the mere presence of information does not mean that everyone will necessarily know about or share it. To be appropriated and used, people must first recognize the *relevance* of information, that is, whether it is interesting or useful to them personally or to others they know.⁷ Therefore, the presence of information can be distinguished from its perceived relevance among people in the environment.

Once information has been contextualized in this way, people can assess its *accessibility* (that is, whether it can actually be obtained, either from other people directly or through media channels). If it is accessible, they can decide whether to actually *access* or 'capture' it. That is, relevance is the precursor of accessibility, and accessibility is a prerequisite for access. Subsequently, people may or may not *use* the information they obtain.

People's *capacity*, that is, their state of knowledge or ability to act as individuals or in groups, links the two aspects of the environment. Knowledgeable people understand (if tacitly) their circumstances and relationships within and beyond their immediate social worlds. Capacity includes *personal factors* (such as literacy, innovativeness, technical or communicative competence, motivation, social intelligence [Cronin and Davenport, 1993] or social capital [Coleman, 1988; Putnam, 2000]) and *situational factors* (geographic location, community norms or common beliefs, existing social network structures, time, economic means, and so on).

People exercise their capacity through face-to-face and mediated communication. Throughout the informing process, people interact with others. Neither access to technology nor information resources in themselves are sufficient to ensure effective social participation: 'Much depends on the information available to actors, but not all' (Calhoun, 1980: 111). Strong and extensive networks of interpersonal relations must also be

maintained, which then influences the demand for technology systems and information resources.

Networked interpersonal interaction is the core of more complex engagement with the society's mediating institutions, that is, social action or participation (for example, community organizing, education/socialization, economic production and consumption, governance, etc.). Participation produces, reproduces and breaks down institutional arrangements, cultural discourse, and technical products and infrastructures.

Eventually, an information environment acquires a distinctive character as institutions make some kinds of information relatively more available than others; as broad-based social action leads institutions to develop or restrict certain media technologies; and as people adopt and use some kinds of ICTs and not others. Their information use affects people's subsequent abilities to seek and share other information. Access affects people's subsequent perception of relevance. Technological systems may become bridges or barriers within and between the institutional and personal/relational aspects.

Related concepts

The term 'information environment' is used somewhat differently here than it is by other writers. For example, digital library researchers call shared collections of documents and associated networked cataloging and retrieval systems 'information environments' (for example, French and Viles, 1999; Smith, 1996). For military strategists and planners, information environment refers to settings where hybrid information/weapons systems are deployed, the context of 'information warfare' (USAFRL, 1999). Some consider it to be synonymous with 'information society' (Walker, 1992).

Recently, similar environmental metaphors have been applied to social spaces or situations, such as 'information ecologies' (Davenport 1997; Nardi and O'Day, 1999) and 'communication ecology' (Metamorphosis Research Team, 2000). These works study interaction, technology use, and information flows in settings with predetermined boundaries, such as neighborhoods or organizations. More broadly, Pierre Lévy (1997) describes a global 'cognitive ecology' or 'knowledge space' generated by the internet. He conceives of a new 'relationship to knowledge' that moves away from 'localized and situated knowledges toward . . . new disembodied or deterritorialized communications space' (Robins, 1999: 21).

In contrast, information environments by definition comprise 'localized and situated knowledges' that differ from place to place and group to group. Environments may or may not correspond to clearly-defined spatial or social structures like 'neighborhood' or 'organization'. They may have links to more global or 'transcendent' information networks, but they typically retain a sense of local identity and interests.

As conceived here, the information environment idea is closer to a line of research in information science on information use environments (IUEs) which describes the flow and evaluation of information in particular social contexts (Rosenbaum, 1993, 1996; Taylor, 1986, 1991). Taylor (1986) proposed the IUE framework as a way to overcome the conventional dichotomy in studies of information-seeking behavior between those that focus on information system structures and constraints, versus those that study the 'needs' or problems of system users. Rosenbaum (1996: 153) thus argues that Taylor's model suggests a structuration-style 'accommodation between structure and action'.

However, the IUE differs from the information environment in several important respects. The boundaries of an IUE roughly match pre-defined 'demographic and non-demographic traits' (Taylor, 1991) of professionals or other groups, who therefore are assumed to share predictable sets of problems. Taylor implies that most information-related action is goal-oriented, purposive and conscious (though he concedes that non-rational action deserves further study). In the IUE, information is assumed to have material or commodity form (for example, documents or messages); other formal but non-documentary types of information (for example, institutional arrangements, cultural discourse, technology infrastructure) are neglected. Interpersonal communication is treated as transparent or unproblematic; knowledge and understanding are individually achieved rather than socially negotiated.

INFORMATION ENVIRONMENTS AND DIFFERENTIATION

How do different information environments, and new media technologies that support them, relate to social change? To begin with, we can hypothesize that relatively homogeneous groups cultivate more homogeneous information environments – that is, they share similar information resources, technology infrastructures, social networks, cultural practices and institutional arrangements. Conversely, more diverse and complex groups may develop more heterogeneous environments with a greater variety of information and technology resources and more elaborate social networks and institutional forms, and may be more prone to differentiation.

All differentiation 'entails fundamental problems in the meaningful organization of action' (Lechner, 1990: 91). To the extent that ICTs promote increased environmental complexity they may exacerbate the strains of heterogeneity and promote differentiation. From a traditional functionalist point of view, these strains would either compel groups to integrate, coordinating their members' actions and interests; or they would lead to fragmentation or separatism if members cannot negotiate their differences.

Alternatively, ICTs might facilitate a balance between order and disorder. Group members might manage the strains, but maintain their differences, by engaging in *heterotopic communication* (Lievrouw, 1998). In this type of communication people seek out others most like themselves, articulate and cultivate their distinct interests, biases and world views, and control or exclude conflicting information, while maintaining an appearance of openness and communicativeness. I have argued that new media technologies are especially suited to heterotopic communication, which is expressed via ICTs in several characteristic ways:

- The competitive use of information as a commodity;
- A heightened engagement with and resistance to surveillance;
- Intense localism underlying a global sensibility;
- Reliance on simulation and spectacle, rather than direct experience, as legitimate forms and sources of information;
- Exhibitionistic/voyeuristic styles of communication and cultural expression;
- Lateral as well as vertical information inequity; and
- ‘Public’ and ‘private’ spheres as strategies for social interaction rather than spatial categories.

That is, in a more complex information environment new technologies may allow users to maintain their differences without necessarily resorting either to separatism or to homogenizing integration. This balance might be detected in three areas of the information environment where ICTs have already had ‘environmental impacts’: access to content, opportunities for sociality outside conventional social structures and organizations, and the relative influence of the two aspects of the environment.

Access to content

In the past, media institutions helped moderate the strains of heterogeneity and differentiation by simplifying the range of available information (for example, through agenda-setting) and centralizing control over content (for example, editorial gatekeeping or ownership). Availability and accessibility were thus limited to relatively short menus of information sources and communication services.

New media content, in contrast, has proliferated into millions of highly specialized sources, creating enormous availability but also a monumental problem of information organization and retrieval. ICTs simplify the mechanics of locating and retrieving documentary information (that is, accessibility and access) from scattered or arcane sources, which may encourage more extensive information seeking across a wider array of available sources. However, the selectivity and filtering built into technological finding aids (like search engines), and the restricted patterns of

hyperlinks built into online content, may also encourage searchers to narrow their inquiries to highly relevant or specific topics.

Links among web sites tend to lead further into a topic rather than across topics. Just a little over one-quarter of all web sites are 'strongly connected' to the rest of the web, and on average users must make 16 links or 'mouse clicks' to move from one strongly connected site to another. A recent study found that web users who seek specific sites by following hypertext links are likely to succeed only about 25 percent of the time (Austen, 2000).

ICTs, therefore, have affected the relative availability, relevance, accessibility and access steps of informing. They may encourage people to narrow their exposure to or choices among a wide variety of available sources. To borrow Alexander's phrase (1990b: 360), ICTs can act as 'dependent media' for particular groups or interests that potentially can 'become a significant source of social polarization' along personal interest lines as well as along income, education, language, ethnicity, or other demographic lines.

Social participation/sociality

Many studies have shown that ICTs present new opportunities for sociality and social participation outside traditional channels of social interaction, for example in chatrooms, MUDs and discussion lists. Lash and Urry (1994: 3) note the choices involved in the 'heterogenization and complexity of space and of everyday life' associated with ICTs; in this climate,

... we are not so much thrown into communities, but decide which community – from youth subcultures to new social movements – we shall throw ourselves into ... the *invention of communities* is a sort of conduct which we more frequently enter into. (Lash and Urry, 1994: 316; emphasis added)

Members of small, dispersed groups can create flexible networks of relationships with others like themselves without going through more broad-based social organizations or institutions. For example, *diasporic communities*, geographically-dispersed members of ethnic or language groups, have developed active internet news groups, electronic mail lists, and distinctively designed web pages to maintain a sense of solidarity and close contact with friends and family around the world (Boczkowski, 1999a; Mitra, 1996; Rai, 1995). These sites seem to exemplify Benedict Anderson's idea of 'imagined communities' (Anderson, 1991).

Some studies suggest that ICTs are associated with high levels of sociality. Katz and Aspden (1997) found that the most experienced users reported having the most contact with family members, community participation and membership in 'leisure organizations'. A recent study by the Pew Internet and American Life Project has drawn similar conclusions (Raney, 2000). In one Toronto suburb with extensive media and internet access, residents

developed more strong, weak and 'knowing' sociometric ties within their neighborhood than did residents of non-wired comparison neighborhoods, while their outside ties remained similar to those of the comparison neighborhoods (Hampton and Wellman, 1999).

Other studies associate ICT use with decreased sociality. Nie and Erbring (2000) found that the most frequent internet users reported engaging in fewer social activities, including telephone calls. They spent less time using traditional media (for example, newspapers and television) and shopping in stores, and spent more time working at home and at the office, than did less frequent users. Likewise, in the 'HomeNet' studies, respondents reporting the greatest amount of internet use also reported declines in family communication and decreases in the size of their local and distant social circles (Kraut et al., 1998).

Groups may use ICTs to construct separate spaces of their own away from the incursions of the public or majority, rather than seeking wider social acceptance. Such spaces are refuges from generalized community values and venues for the expression of their own beliefs or 'counterabsolutisms' (Lechner, 1990: 93). Group members can rely less on persuasive communication to find common interests or mediate conflicts with outsiders. They may discount 'real world' evidence or interpretations of reality and resist consensus on larger-world concerns. They can also erect technological barriers to intrusive communications or surveillance, or shield themselves from unwanted content, messages or interactions (for example, by using web and email filters, television v-chips, Caller ID, or encryption services offered by firms like ZeroKnowledge).

Of course, the creation of separate spaces may constitute the first step in the formation of a new community that creates its own institutional-style arrangements or conventions. For example, gamers and chat room participants have formulated and enforced rules of conduct, and bidders in online auctions have devised systems for rating one another's trustworthiness. Alexander points out that "fragmentation" rarely occurs without the possibility for corresponding increases in ego capacity and moral development and without the extension and proliferation of opportunities for meaningful solidary communities' (Alexander, 1990a: 12).

Aspect influence

Changes in access to content and social participation also place strains on the boundary between the institutional and personal/relational aspects of the environment. Growing disaffection with traditional institutions and their activities (for example, law, pluralist governance, academic research, medical practice, public education), a new focus on localized, self-interested forms of social interaction, and the spatial and cross-cultural extension of

interpersonal networks via ICTs may all signal the development of new tensions between the institutional and the personal.

As Stehr (1994: 233) points out, information technologies have already extended individuals' and small groups' 'capacity to act'. ICTs allow users to locate, capture and exchange available information without necessarily feeding back what they learn to mainstream institutions or society at large. And people have created new forms of affiliation and sociality that can displace conventional social organizations or activities. ICTs give individuals many of the same tools and controls that institutions have, including 'privacy-enhancing technologies' (Burkert, 1997) designed to resist incursions by marketing, financial, government, and other institutions.

However, social institutions also use new technologies, often as a means to capture information about personal/relational activities and to maintain institutional control. Retail transaction data is recorded by point of sale devices in both 'bricks and mortar' retailing and e-commerce. Web surfers' keystrokes and mouse clicks are monitored by specialized software agents. Electronic records are 'mined' to compile dossiers on individuals. Moreover, the accelerated concentration of ownership across 'content providers', telecommunications, new internet firms, and computer hardware and software industries seems designed to restore the conventional roles of content producers and consumers/audiences (see *The Economist*, 2000), as well as the centralized patterns of information flow and control between institutions and individuals that developed under mass media systems.

Some argue that the extension of intellectual property claims (primarily copyrights and patents) to an ever-greater range of activities and forms of information, and the corresponding depletion of the public domain, shore up the advantages of large corporate and institutional concerns and limits the creativity of individuals and small firms (Litman, 1992). On the other hand, efforts like the open-source software movement (for example, the 'freeware' Linux operating system), and the development of sophisticated information-sharing software, challenge claims by copyright holders that restrictive intellectual property controls are needed to foster technological innovation (Markoff, 2000; Postrel, 2000).

Web-based forums or discussion groups hosted by traditional mass media organizations (for example, newspapers and broadcast television networks) also illustrate the institutional-personal/relational tension (Boczkowski, 1999b; Light and Rogers, 1999; Schultz, 2000). In one sense, forums are 'demassified' forms of feedback; participants help set the agenda for what are mainly one-way content providers. However, forums also allow large media organizations to capture valuable marketing information about prime audience preferences or biases without actually ceding editorial or interpretive control over content.

UNDERSTANDING ICTS AND SOCIAL CHANGE

In this essay I have outlined the potential usefulness of a neofunctionalist perspective on the study of ICTs and society. I have suggested that patterns of social structure, especially social differentiation, may be attributable to variations in knowledge, information, communication and differing uses of media technologies among social groups. I have taken a neofunctionalist approach to develop a simple descriptive framework, the information environment, which identifies key steps in knowledge and information creation, use, and disposition. Variability in these steps may indicate changes toward differentiation, integration, or the development of new social strategies that balance the two.

Recent empirical studies on new media and sociality are exploratory, and have important limitations. Most concentrate exclusively on computer and internet use, and say little about other technologies (especially wireless services like cell phones or pagers).⁸ Many studies are based on self-reported survey data that is correlated with respondents' demographic characteristics. Yet new media (perhaps especially internet) use is not monolithic; people develop fairly personalized repertoires of personal and mediated interaction and information seeking depending on their interests, inclinations, technological acumen, etc. – that is, their capacity. Styles or strategies of technology use may not correspond to users' demographics, and they are likely to change rapidly, making them difficult to measure even with repeated-measures or panel-type research designs.

Despite their problems, however, existing studies suggest that new media use can displace traditional face-to-face sociality and mass media use. Reliance on highly fragmented or targeted information sources, such as those proliferating on the internet, may reinforce people's identification with narrow interests, their sense of difference from other groups and indifference toward larger social concerns. These in turn may influence the development of various clique or subcultural perspectives that displace common knowledge or a broadly-shared cultural sensibility.

Elsewhere (Lievrouw, 2000) I have proposed an indicators-type approach to the observation and measurement of information environments. Demographics, quality-of-life measures, and media consumption, cultural participation and social network data, for example, might be used together in a triangulated strategy to discover the unevenness or *topoi* within and among different communities. Until such a multivariate approach is devised, data from existing studies is likely to remain piecemeal and only suggestive.

Here, I have argued that to the extent that they are used to produce and circulate narrowly-focused or special-interest content, or to create social spaces for narrow-interest groups apart from the larger society, and in the absence of influential, general-interest information sources, new media technologies may foster social complexity. Proliferating new media systems

and content may be characteristic of a differentiating social structure with many competing social and cultural interests, knowledge cultures, lifestyle niches, 'life-worlds' or 'image tribes' (Turow, 1997).

However, complexity and differentiation in highly technologized social settings may not necessarily generate the counter-pressures toward integration or value generalization predicted by classical functionalism. New technologies supply the means for meaningful interaction, sociality and learning that institutions once provided, without making the same demands for broader 'core solidarity' or norm consensus embedded in traditional media and institutions. The 'network society' may turn out to be more differentiated than societies supported by traditional media and social institutions, perhaps because heterotopic communication or other new strategies for interaction and information seeking have evolved. Castells suggests this when he observes,

Culture is constructed by the actor, self-produced and self-consumed. Thus, because there are few common codes, there is systemic misunderstanding. It is this structurally induced cacophony that is celebrated as postmodernity. However, there is one common language, the language of the hypertext. (Castells, 2000: 21)

Obviously much more empirical research is needed to clarify and test the ideas proposed here. Operationalization of the main constructs in the information environment model will be a major challenge, though as stated previously, an indicators approach may be helpful. In any event, a better understanding of the social consequences of new media should account for their ability to create as well as break down social boundaries, and their role in the maintenance of social complexity or the 'proliferation of life worlds'. By studying 'informing' it may be possible to avoid what Castells (1997: 358) predicts will be the 'informed bewilderment' of the coming century.

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Notes

- 1 Putnam bases most of his analysis on data drawn from General Social Survey conducted by the National Opinion Research Center at the University of Chicago. Recent GSS data is available online, URL (consulted 19 May, 2000): <http://www.icpsr.umich.edu/GSS99/>
- 2 In this sense, knowledge is 'that condition in virtue of which one is *able* to do something' (Nussbaum, 1992: 47; emphasis in the original). It is similar to Amartya Sen's idea of the individual's capability to achieve, 'reflecting the person's freedom to lead one type of life or another' (Sen, 1992: 40; see also Garnham, 1999).

- 3 Information can also be thought of as 'knowledge representation', a concept in information science (Farradane, 1976, 1979). Once produced, information becomes more or less independent of its creators, having some of the qualities of a resource that can be moved, traded, accumulated, stored, retrieved and destroyed – qualities which also make it prone to commodification. As Stehr (1994: 120) says, information is 'self-sufficient'.
- 4 The organized, intelligible or 'digested' character of information distinguishes it from *data*, which is simply recorded and collected symbolic material.
- 5 As community members organize and reorganize their understandings together, informing becomes *informing-as-praxis*, where praxis is understood as 'the enactment or performance of social conduct' (Cohen, 1996: 112). The concept of informing-as-praxis is explored at more length in Lievrouw (forthcoming).
- 6 Availability is related to the 'context of availabilities' of information idea developed by Hartmut Mokros; see Mokros and Lievrouw, 1991; Mokros and Ruben, 1991.
- 7 For overviews of the literature on relevance in information-seeking behavior, see Harter, 1992; Saracevic, 1975; and Schamber, 1994.
- 8 However, some promising new studies of cell phone and pager use by William Dutton and his colleagues at the University of Southern California are underway.

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LEAH A. LIEVROUW is Associate Professor in the Department of Information Studies in the Graduate School of Education and Information Studies and is affiliated with the Communication Studies Program at UCLA. Her research and writing focus on the social and cultural changes associated with information and communication technologies and the relationship between new technologies and knowledge. Dr Lievrouw is co-editor (with Sonia M. Livingstone of the London School of Economics) of *The Handbook of New Media: Social Shaping and Consequences of ICTs* (in preparation for Sage Publications, London).
Address: Department of Information Studies, University of California, Los Angeles, 216 GSE&IS Bldg, Box 951520, Los Angeles, CA 90095–1520, USA. [email llievrou@ucla.edu]
