The Palgrave Macmillan Digital Sociology

Critical Perspectives

Edited by
Kate Orton-Johnson and Nick Prior

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palgrave
macmillan

Softcover reprint of the hardcover 1st edition 2013 978-0-230-22282-3

First published 2013 by
PALGRAVE MACMILLAN

Palgrave Macmillan in the UK is an imprint of Macmillan Publishers Limited, registered in England, company number 785998, of Houndmills, Basingstoke, Hampshire RG21 6XS.

Palgrave Macmillan in the US is a division of St Martin's Press LLC, 175 Fifth Avenue, New York, NY 10010.

Palgrave Macmillan is the global academic imprint of the above companies and has companies and representatives throughout the world.

ISBN 978-0-230-22283-0 ISBN 978-1-137-29779-2 (eBook)
DOI 10.1057/9781137297792

This book is printed on paper suitable for recycling and made from fully managed and sustained forest sources. Logging, pulping and manufacturing processes are expected to conform to the environmental regulations of the country of origin.

A catalogue record for this book is available from the British Library.

A catalog record for this book is available from the Library of Congress.

10 9 8 7 6 5 4 3 2 1
22 21 20 19 18 17 16 15 14 13

Contents

Part III Structures

Part IV Mediations

Illustrations

Figures

Tables

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Introduction

Kate Orton-Johnson and Nick Prior

The increasing pervasiveness of digital technologies in everyday life has fostered much academic debate about social relationships and social structures in what has been termed an 'Information Age'. Emerging from these debates is an interdisciplinary field of research concerned with the complexities and contradictions involved in the transformations which information and communication technologies (ICTs) are purportedly bringing about across cultural, political and economic practices (Baym, 2010; Bijker & Law, 1997; Jones, 1995a, 1995b, 1997; Wellman & Haythornthwaite 2003). As sociologists we see exciting and important opportunities for the discipline to contribute to a growing and diverse range of empirical and theoretical work that seeks to map these changes. From cyberselves to online communities, from media war to networked inequalities, from culture to social structure, sociology and our sociological imaginations are confronted by new digital landscapes.

Internet research (IR) has provided scholars with a wealth of research that has refocused, challenged and recontextualised concepts that have long been a staple of sociological enquiry. In a relatively short but rich history IR has traced hyperbolic discussions of revolutionary and transformative futures and the potentially deleterious social consequences of virtual practices. While some might claim that we can now declare the end of the 'cyberbole' (Woolgar, 2002), the aim of this collection is not to recap or evaluate these literatures and debates. Our concern, as sociologists, was to question the position of the discipline in this interdisciplinary landscape. The collection was prompted by our own curiosity about how sociology was dealing with what we see as a new phase in IR. The very pervasiveness and normalisation of contemporary digital technologies means that few spheres of social enquiry

are insulated from some form of digital manifestation. IR is no longer the study of an exotic, esoteric or autonomous cyberspace, and we felt dissatisfied and intrigued by the ambiguities and uncertainties faced by sociologists trying to think critically about new intersections, continuities and flows between the social and the digital. We conceived of the collection as a disciplinary pause for thought, providing a space for reflecting on the ways in which the core concerns and contours of sociology are being explored, challenged, shaped and reformed in diverse and imaginative ways.

As sociologists interested in the sociology of technology and in technologies of the social, this collection is shaped by questions we have about the nature of the discipline in the digital age: Are existing sociological concepts still fit for purpose or are they now stretched beyond recognition in new applications and shifting social contexts? How can sociology re-evaluate its core ideas in an interdisciplinary landscape? To what extent is the 'sociological imagination' a sufficient basis from which to embark on investigations into digital worlds with cross or even trans-disciplinary indices? And if the discipline is found wanting, what kinds of disciplinary borrowings, combinations and clashes might we expect or even encourage?

The authors of the following chapters had an open remit to explore these questions and, accordingly, competing discourses and dialogues run throughout the collection. Together the chapters make visible the discordances, contradictions and challenges facing sociology and emphasise the diversity of the discipline and the rich field of debates that are open to sociological enquiry. Despite this diversity, a key and important commonality across the chapters is an emphasis on the need for sociology to conceptually move beyond the binary oppositions of virtual/real and transformation/continuity that have characterised much existing debate. This atavistic impulse towards dualism has structured the ways in which we understand the relationship between technology, society and culture. The spirit of the collection as a whole, and the chapters individually, is to reflect on the increasing normality and inclusion of the digital in everyday life, resisting binary tendencies and highlighting the mess *and* the continuities in new digital social landscapes. The chapters reflexively draw on the ambiguities of digital cultures to examine the ways in which technologies shape, or indeed leave unchanged, key sociological domains.

A number of the chapters advocate what Beer and Burrows (2007) have argued is key to a sociology of web 2.0 social media, better

description and more detailed explanations of new concepts and contexts posed by digital technologies:

> We are of the view that the discipline would do well at the present juncture to . . . embrace a renewed interest in *sociological description* as applied to new cultural digitisations . . . . At a time of rapid sociocultural change a renewed emphasis on *good* – critical, distinctive and thick – sociological descriptions of emergent digital phenomena, ahead of any headlong rush into analytics, seems to us to be a sensible idea. We need to understand some of the basic parameters of our new digital objects of sociological study before we can satisfactorily locate them within any broader frames of theoretical reference.
>
> (2007:11)

We believe that this remains a valid and vital goal in seeking to explicate new concepts and navigate new challenges to existing sociology tenets. However, the task of critique is not obsolete, and the chapters in the collection act as a bridge between the descriptive needs and critical questions that are vital for sociologists attempting to understand the landscapes of the discipline.

An important emerging theme of the collection has been an emphasis on the durability of the material. This is a return to materialities not only in the sense of lived, situated actions, but also in the sense of 'thick' engagement with the devices, processes and practices that gravitate around digitally mediated lives. As such we believe that the collection acts as an exploratory starting point for debates that seek not to reinforce a position or to stake a disciplinary claim but to evaluate new conceptual tools and languages with which we can flex our sociological imaginations and with which we can raise and explore a set of vital questions on the nature of sociology after the digital.

The collection is divided into five sets of paired chapters, each focused on key sociological concerns: relationships, spaces, structures, mediations and practices. This structure does not aim to provide a comprehensive panorama of the substantive territories of the discipline. Rather the intention is for each pair to be read as a dialogue and, for the text as a whole, to foster conversation across the disciplinary grain. In this spirit each pair of chapters is followed by an afterward which reflects on the critical rethinking theme of the collection, raising questions about how sociology might remember, revisit, revise or dust down its core concepts in the light of digital provocations.

Relationships

The two chapters in Part I tackle the domain of relationships and personal lives in an exploration of the gendered nature of digital landscapes. Jamieson, reflecting on her earlier work *Intimacy: Personal Relationships in Modern Societies* (1997), makes explicit the optimistic and pessimistic binaries that are entwined in the discussions of digital technologies and mediated personal lives. In revisiting classic interactionalist accounts of the self in the context of a networked society, the chapter evaluates the assumption of physical co-presence in existing theoretical approaches to understanding personal relationships. Taking a critical approach to the affordances of cyberspace for new forms of intimacy and 'networked individualism' (Wellman et al. 2006), Jamieson makes an important point about the persistence of hierarchies and power relations around sexuality and gender, questioning the transformative effect of mediated interactions and relationships. Her caution points to the need to acknowledge the theoretical *continuities* of classical accounts of personal relationships, and her call for existing theoretical perspectives to undergo a 'refurbishment' (rather than a complete overhaul) emphasises the need for the recognition of historical, global and local contexts in sociological understandings of gender and identity online.

Green and Singleton develop this theme in arguing that we need to consider the ways in which gender is often rendered invisible in sociological debates around the digital. In addressing issues of '*gendering*' and '*gender-in*' social and technological change they examine the theoretical challenges raised by a networked society and argue that the sociology of technology would benefit from insights and critiques long provided by feminist sociology. Like Jamieson, Green and Singleton call for critical caution in the face of binary transformative narratives and emphasise the need for gender to remain a vital sociological lens through which one can understand mediated relationships and environments. In their empirical research on digital sociality Green and Singleton use the mobile phone as an example of the ways in which technology can inscribe and reveal gender relations, as well as being a technology that enables ways of 'doing' intimacy and belonging.

Both chapters raise interesting questions about the ways in which technologies are implicated in personal relationships and in the balance of public/private spaces and home/work domains and both force us to reflect on what freedom and surveillance may mean as part of a gendered digital everyday life. In formulating these kinds of questions,

the chapters offer possible future pathways for sociology to interrogate the complexities of mediated lives and intimacies.

Spaces

Changing notions of space, community and connectivity have been central to debates around cyberspace, digital localities and virtual cartographies. Drawing on urban informatics the first chapter in this part challenges ontological distinctions between *place* and *flow*. While not necessarily an obvious sociological starting point, Burrows and Beer make a case for looking outside of the discipline for conceptual and empirical input into how sociology can best understand place and space. Tracing the importance of transactional data, new forms of technoculture and new practices of technology production and consumption, the chapter argues that sociological questions of surveillance, trust, risk and mobility are pushed to the fore in new debates about human action and physical/virtual spaces mediated by ubiquitous networked devices. Highlighting the increasingly complex relations between individuals, the environments they inhabit and the social-technical production of everyday life, Burrows and Beer suggest a new target for sociological analysis in the form of the 'technological unconscious' and urge for a reformulation of the discipline's vocabulary, methodological approaches and traditional perspectives towards urban life.

The second chapter in this part tackles the transient and adaptive concept of community. Here Evans argues that digital spaces and technologies, rather than becoming transformative hosts for new forms of global community, have closely replicated long-standing social networks and formations. Evans traces early debates about the utopian possibilities afforded by cyberspace for community formation and uses the notion of community as a critical tool to raise questions about how sociology can understand computer mediated communication (CMC) and mediated social relations. She argues that while different communication technologies have shaped new communities of interest, attachment and belonging they have also reinforced existing social boundaries, locales and cultures. Further challenging early hopes of innovation and liberation in cyberspace, Evans poses interesting questions about what community means in online environments of leisure, consumption and advertising, where boundaries of mass media and digital capitalism are increasingly blurred. In a critique of the 'thin' and fragmented nature of online connectivity, Evans argues that the task of sociology must be to

examine more closely new forms of networked sociality that have fore fronted and fragmented the concept of community.

Structures

The continuity and reproduction of existing inequalities, power relations and hierarchies are themes that cut across the collection, and the chapters in this part focus on social structures from two perspectives: structural inequalities and an empirical example of the ways in which information technologies can shape social structures.

The first chapter tackles the issue of the 'digital divide' by arguing that far from opening up accessible networks of communication and opportunity, technologies have the potential, without policy intervention, to create and exacerbate inequalities in society. Noting the conceptual distinctions between a 'network' society and an 'information' society, van Dijk argues that the social and media networks that shape society have a number of structural properties that contribute to material, social and educational inequality. Taking these forms of inequality as classic sociological concerns, van Dijk questions the narratives of newness that characterise debates around the digital divide as a phenomena inextricably linked to technology. Exploring issues of access, social structures, power relations and individual agency, the chapter argues that ICTs reinforce and amplify existing inequalities. While this suggests strong continuities with long-standing sociological concerns and categories of demographic and structural difference, van Dijk argues that an alternative *network* analysis may be of more value in explaining the more immaterial inequalities found in the *information* society.

The second chapter uses the example of financial markets as a mirror through which to examine sociological concepts of time and space, culture and contingency. In unpacking the technological character of markets, the chapter traces sociological shifts in understanding the relationship between finance and information and argues that, as an object of study, finance represents a rich field for exploring interconnections between ICTs, the economy and social structures. Pardo-Guerra draws on the concepts of structure and flow to argue that new forms of finance provide interesting examples of the ways in which technologies are implicated in the organisation of interaction, the production of knowledge(s) and the co-evolution of practice and regulation. The chapter raises timely questions for sociology about material and immaterial social structures and, echoing other chapters in the collection, emphasises the need to move beyond the dichotomies of digital/analogue that fail to capture the empirical nuances of social structures.

Mediations

The first chapter in this part provides an example of the ways in which technologies are reconfiguring our media landscapes and changing the role of social actors in new forms of digital mediation. Drawing on ordinary citizens' use of social media, Allen and Matheson use warfare reportage to explore the ways in which sociology might understand convergences of old and new media. Questioning the dichotomy of 'celebratory' and 'condemnatory' accounts of technology and digital convergence their focus is on the social contingences and materialities of technological mediation. Tackling questions of virtuality, risk and new temporalities, the chapter provides a key example of sociology's need for both detailed description *and* for a critical, more nuanced vocabulary in order to understand the nature of technological change.

The second chapter in this part considers the nature of networks in a mediated society and, sharing Allen and Matheson's concern with rethinking what we mean by mediated, calls for a re-conceptualisation of the ways in which we understand social *and* digital networks. Noting sociology's long history of making visible the ways in which social phenomena are represented/constituted, Cavanagh argues that the Internet can be viewed as a unique lens through which to explore late capitalism and exiting narratives of networks, but one which cannot be generalised to all social networks. Importantly, in the context of this collection, Cavanagh notes the interdisciplinary nature of popular discourse around network analysis and explores how these inform sociological scholarship in the field. Echoing other chapters in the collection, she notes the lack of conceptual clarity around the ways in which terminology has been operationalised, methodologically and empirically, across the discipline and poses the question 'what does it mean to see society as a network'? In examining the implications of sociological understandings of networks and socio-technical understandings of networks, the chapter questions the ways in which sociology seeks to conceptualise ways in which new mediations and architectures connect social actors.

Practices

The final part of the book considers what we have defined as the social practices of digitised education and health. Classically seen as core *structures* of society, we draw on the notion of *practices* in a critical examination of the ways in which technological change and innovation are increasingly challenging traditional understandings of teaching, learning and healthcare.

Selwyn, tackling timely debates about the role of the state, the economy and personalised learner pathways, argues that sociology has a critical role to play in the analysis of 'new' modes of teaching and learning that are 'reconfigured' by digital technologies. Selwyn highlights the growing emphasis placed on the individual and on mediated, collaborative and participatory learning experiences that follow a web 2.0 logic of informal networks of knowledge production and consumption. Importantly, however, he challenges the transformative narratives of technological–educational change in highlighting the entrenchment and continuity of existing teaching and learning practices. In this sense, the chapter makes explicit one of the overarching themes of the collection; it is vital for sociology to take an analytical pause for though, to move beyond dystopian and utopian approaches to digital technologies and to acknowledge the messy reality of changing socio-technical impacts, practices and environments.

One such messy reality is explored in the second chapter in this part as Kivitz highlights the diverse, contested and interdisciplinary nature of what has been defined as 'e-health'. In contrasting the medical gaze and the sociological gaze Kivitz raises similar issues to Selwyn around new patterns of information production and consumption. In a health context, this poses questions around agency, trust, power and expertise as the traditionally understood doctor–patient relationship and sick role model are challenged by new patterns of online health information seeking.

Kivitz argues that research on the Internet and health and illness has provided sociology with opportunities for revaluating its traditional objects of study and points to new mediated ways of 'doing' and understanding health. However, she mirrors the emphasis of earlier chapters on the need for a more cautious and critical approach to the experiences and contexts of digitally mediated health and illness practices and stresses that a contemporary sociology of health and illness must expand the range of social actors that are implicated in these shifting relationships and contexts.

As a whole, we see the collection as a moment of sober reflection that takes stock of a range of claims, counter-claims and concepts in IR. While there have been a number of important collections and contributions to debates on specific aspects of the Internet, of digital technologies and of ICTs, none have systematically pursued what is distinctive (or not) about sociology's response. We hope that the dialogue opened up here provides scholars with an opportunity to reflect on the role of sociology in responding to, critiquing and shaping emerging

debates about the nature of the social, the cultural and the technical in the context of digitally mediated environments.

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Part I
Relationships

1

Personal Relationships, Intimacy and the Self in a Mediated and Global Digital Age

Lynn Jamieson

Introduction

Few would disagree with Roger Silverstone that the near global exposure of almost all individuals to various forms of mass media content invisibly informs and constrains much social action and belief (Silverstone, 1994: 133). There is less agreement about the precise nature of the impact, particularly in the domain of personal life. The concern of this chapter is digitally mediated forms of communication and intimacy in personal relationships. My work in the 1990s sought to untangle contradictory claims about social change, selfhood and the quality of personal relationships, reconnecting theory with empirical evidence. The optimists in debate then, exemplified by Anthony Giddens, saw personal relationships as becoming more intense and democratically collaborative projects as people sought to anchor themselves through intimacy in rapidly changing worlds. For the pessimists, then exemplified by Zygmunt Bauman and Ulrich Beck, the same forces of rapid change were corrosive of personal relationships and rendered intimacy insipid, vapid and unworkably fragile. Exaggeratedly optimistic and pessimistic postures also haunt discussions of digital technologies and everyday personal lives, similarly implicating theories of selfhood and social change.

When *Intimacy: Personal Relationships in Modern Societies* was first published, a review complained that topics of cybersex and computer-mediated communication had been omitted. The reviewer elaborated on the missed opportunity; the book should have addressed both popular speculations, such as 'the potential decline of skin against skin sex and the extension of the body into new dimensions', and the accumulation

of new evidence about the impact of the Internet on personal life. The reviewer noted by way of example, 'already data suggests cyber-dating has the potential to minimise the risk of emotional harm for young women' (Stevenson, 1999: 849). A simultaneous lament over silence on queer theory, 'gender trouble' and postmodern theorising perhaps also suggested how the reviewer saw the appropriate theoretical tools for the analysis of computer-mediated communication. At the time, although interested in these theoretical currents, I had a curmudgeonly disinclination to take dramatic speculations about cybersex seriously. I also judged the body of evidence detailing the impact of computer-mediated communication on personal relationships as rather thin, both in general and with respect to the particular example about cyber dating. I might also have argued that the implied issues around gender, sexuality, identity, embodiment and trust were certainly and extensively addressed throughout the book, along with the relationship between discourse and everyday practice, as an aspect of my theme of intimacy. Fundamentally, though, the reviewer was right; more specific theoretical questions about the part played by digital-age technologies in the transformations of personal relationships, intimacy and the self should have been explicitly addressed. It is easier to do this now than in 1998 because there is a more substantial body of relevant empirical data to help provide answers (Valentine, 2006).

Debates about intimacy articulate with much wider theoretical and historical concerns: understandings of subjectivity and 'the self' and of the nature of social change. In the first section, I make the case that the classical interactionist accounts of the self, with some refurbishment, can remain fit for theoretical purpose in a digital age, despite seeming to take face-to-face personal relationships for granted as ontological necessities. I also address the apparently better fit between a 'network society' and a theoretical emphasis on selves shaped by discourse rather than relationships. In the second section, I return to previous analysis of how people construct and sustain intimate relationships to reconsider co-present and digitally mediated interactions in terms of practices of intimacy (Jamieson, 2011). In the final sections, I look briefly at the empirical literature, firstly on relationships that are imagined and formed through digital means and secondly on the digital mediation of relationships which simultaneously have a face-to-face history.

Theorising the self in a digital age

Face-to-face interaction and personal relationships have a privileged place in various strands of psychology and in the ontology and

epistemology of the traditions of symbolic interactionism (Mead, 1934) and phenomenology (Schutz, 1932); intense, face-to-face, sustained communicative interactions are productive of a sense of self with agency and autonomy, as well as of a sense of a normatively ordered social world in which the self is anchored. In Mead, it is the interaction with embodied others in childhood which produces an inner dialogue with a 'generalised other'. The significance of physical and emotional interaction for the well-being of children and the significance of enduring ontological security are widely accepted within social science and are evidenced within psychology; people suffer long-term damage if their childhood lacks one or more loving relationships providing physical contact and attentive care. (Ontological security is used here to mean security of the sense of self and confidence in the continuity of one's being-in-the-world. The term was most famously first used in sociology by Giddens (1984), who drew on the fields of psychiatry and psychoanalytic psychology, particularly Erikson (1963) and Sullivan (1955). It was a key concept for Laing (1960), and also briefly cited by Giddens, whose sociological contribution was recently reappraised by Scott and Thorpe (2006).) Many contemporary social scientists writing about either subjectivity or personal life or both continue to draw on psychoanalytic psychology, symbolic interactionism and phenomenology, albeit eclectically and not exclusively. Over the decades, their basic insights have been elaborated or supplemented by other approaches more attentive to issues of gender, power and inequality. Proximate, sustained, emotionally charged relationships with co-resident or frequently co-present family and friends continue to loom large theoretically in some strands of contemporary theorising as the most 'significant others' shaping a sense of self, particularly in childhood, with other voices relegated to the background chorus (Berger and Luckmann, 1966). If personal relationships are increasingly digitally mediated, is it simply assumptions of co-presence that need to be modified or does this indicate the need to theoretically uncouple self-formation and face-to-face personal relationships?

The theoretical significance of face-to-face interpersonal relationships for shaping selves and social worlds was already called into question by some deployments of the work of Michel Foucault that were grounded in an analysis of the historical period since the Enlightenment, significantly predating the digital revolution. Although the hands-on activities of parents managing children do feature in Foucault's descriptions of the social production of self-disciplined bodies (Foucault, 1978), the aspect of his theorisation which had particular impact is his characterisation of the power of discourse to shape selves, particularly discourse as

mediated, disembodied expert knowledge, a theme taken up by Nicholas Rose (Rose, 1996). Rose leads a genre of theorising in which mediated discourse, not interpersonal relationships, powerfully shapes selves, and which, therefore, has no need to itemise a distinction between an inner circle of intimate 'significant others' and the 'background chorus'. Users of this genre also typically gloss over the distinction between the processes creating the apparatus of a sense of self in early childhood and the business of being ourselves in adulthood.

Writing at the same time as Rose, Manuel Castells linked the rise of the Internet with a pattern of forming relationships that Barry Wellman subsequently dubbed as 'networked individualism' (Wellman et al., 2006). Castells defined 'individualism' in terms of self-directed (rather than tradition-directed) projects and relationships, noting, 'it finds in the Internet the proper technology for its expression and its organization' (2002: xxx–xxxi). The term 'networked individualism' suggests a historical shift in emphasis from long-term loyalties to family, friends and place-based communities to more fluid and dispersed social networks. The implied automatic opposition between loyalties of a more relationally embedded nature and a particular form of 'individualism' is an old manoeuvre which is open to challenge theoretically and empirically (Jamieson, 1987, 2005). Neither Castells nor Wellman are as radical as Rose in their theoretical declarations concerning the irrelevance of face-to-face personal relationships but they make it clear that the Web has helped shift the focus of individual and social development away from strong to weak ties (Granovetter, 1973). Wellman's focus on networks takes little account of how sufficient ontological security is acquired to equip people for the active networking necessary for people 'to thrive or even to survive comfortably' as no group, neighbourhood or household can be relied on for 'taking care of things for them' (Wellman et al., 2006: 164–165).

Foucault's vision of the shaping of selves through self-censoring performance chimed with feminist accounts of the social construction of gender and sexuality, albeit these were written in theoretical traditions emphasising interaction in face-to-face intimate relationships as key sites of socialisation rather than orientation to mediated discourse. A different emphasis on the fluidity of selves, identities and performance emerged in the philosophical work of Judith Butler (1990), with little acknowledgement of such interactionist traditions. Donna Haraway, informed by the sociology of scientific knowledge, coupled radical fluidity of selfhood and technological developments in her self-declaration as a cyborg and in her advocacy of using the affordances

of technologies for feminist performance (Haraway, 1997; Wajcman, 2004). Intimate face-to-face relationships become of little theoretical relevance in this strand of writing about selves, and their salience in lived experience remains out of focus since attention has shifted to the technically enhanced and mediated.

There are many theorists occupying the middle ground between these positions, acknowledging the power of mediated discourse in framing multiple and fluid identities without denying the significance of face-to-face intimate relationships for ontological security. It is possible to acknowledge a debt to symbolic interactionism or phenomenology and attend to the power of discourse. Diverse examples include the social psychologist Peter Hewitt (2007) and the feminist author Dorothy Smith (1987). Defenders of the interactionist tradition note that it need not be read as at odds with the emphasis on the fluidity of selves. A sense of self as both fluid and fragmented can be found in the work of Mead: 'For Mead and the majority of those following in this tradition, there are "all sorts of different selves answering to all sorts of different social reactions" (Mead, 1962: 142; Holmes, 2010: 145)'. This is consistent with the writing of the interactionists Berger and Luckmann (1966) on mediated discourse forming part of the 'background chorus' that plays a supporting role in the sustaining of a sense of self, perhaps including a revitalising of the 'generalised other' (Holdsworth and Morgan, 2007). This fits in with the genre of media studies, exemplified by Morley's (1986) analysis of television (TV) and domestic leisure, which acknowledges the significance of personal relationships for how people tune into, hear and interpret mediated discourse. However, if disembodied mediated discourse joins the 'background chorus', then it may enter into how all parties imagine, plan and enact their relationships. Nevertheless, 'significant others', in the form of personal embodied relationships, continue to play the main part. In a digital age, however, how 'significant others' play their part will include mediated communication as well as co-present interaction.

Theorising intimacy in a digital age

Anthony Giddens used the term 'the pure relationship' (1990, 1991, 1992) to describe relationships based on what I call 'disclosing intimacy', a dialectic of mutual self-disclosure, a sharing of inner thoughts and feelings. Giddens used the term 'pure' because the sustainability of the relationship relies only on participants' willingness to continue because of their mutual pleasure therein. The elements of the definition

do not, in themselves, privilege the physical co-presence of face-to-face relationships. In essence, it is an intimacy of the self rather than the body, although it might be enhanced by bodily intimacy. It is theoretically possible for the practice of self-disclosure to occur online, mediated by digital technology, either generating a fleeting sense of intimacy between hitherto strangers or developing the intimacy of an already established relationship that began with co-presence. When online relationships between initial strangers are sustained over long periods of time, they often start to approximate friendship developed 'offline' (Chan and Cheng, 2004), but such convergence often involves adopting additional means of communication beyond the initial digital context (Baym, 2010). Research indicates that mutual disclosure of personal troubles in online environments established for this purpose do provide emotional support (Miyata, 2002). However, as I have argued using research evidence about the everyday lives of friends, lovers, couples, families and kin (Jamieson, 1998, 1999, 2005), 'the pure relationship' lives more strongly in talk about relationships than in relationships as they are lived. In relationships as they are lived, mutual disclosure is not the only way of establishing intimacy and may not always be a sufficient way to sustain an intimate relationship. Moreover, while distance relationships can be meaningful intimate relationships, co-presence is a more integral component of some ways in which people generate intimacy than 'disclosing intimacy', for example, spending time together, providing care through practical acts and demonstrating affection physically.

A particular form of co-presence that is a practice of intimacy in itself is choosing to spend time together to enjoy the pleasure of co-presence. Being together can both express and enable intimacy. Prioritising time, offering privileged access to time and seeking 'quality time' are all ways of expressing intimacy. A sense of intimacy can also grow stronger through time together and the fact of co-presence can facilitate further practices of intimacy, such as disclosing intimacy or practical acts of care. The research literature reveals instances in which couples claim love, shared knowledge and deep mutual understanding, despite also noting that they have little need for talk and say very little to each other. Such couples communicate in looks and body language, shared daily routines and practical acts of care. The depth of empathy and affection some couples achieve through physical co-presence with few words seems unlikely to be reproduced 'silently' in disembodied virtual co-presence drawing on the repertoire of online gestures and gifts such as 'poke', 'share the love' or the many 'send a . . . ' options offered by

social networking sites and associated simulation games. Developing the use of emoticons, such as the smiley faces developed for text messages, may add emotional nuance and depth among skilled text and email practitioners (Barker, 2007) but they seem unlikely to do much on their own. These digital gestures still seem limited compared with the opportunities for developing a sense of deeply knowing each other that arise for the taciturn who live sympathetically and attentively side by side. Spending time together digitally may parallel the building of a relationship through co-present spending time together to a degree but is unlikely to generate intimacy without disclosure through modes of interaction involving talk, such as chat rooms, email and Internet telephony.

Across a number of types of relationships, intimacy can be built and sustained through practical actions of caring for, giving to or sharing with others. It is possible to orchestrate practical acts of caring for somebody as well as expressions of caring about them online. For example, Parreñas (2005) describes Filipino mothers overseas providing economically and emotionally for their young adult children back home by putting funds in co-managed bank accounts, making routine phone calls, sending regular text messages and parcels of everyday necessary items and gifts. The literature on transnational families also provides examples of people orchestrating care for elderly relatives from a distance. But distance relationships clearly have a restricted potential to directly deliver practical care. In situations in which people hope for or expect practical help, failure to be there to deliver may undermine intimacy hitherto successfully sustained through other practices. The cultural framing of some relationships more strongly requires literally 'being there'; for example, gendered notions of appropriate behaviour for 'good mothers' has always threatened to undermine the efforts of Filipino women migrants mothering their children from a distance.

Physical contact necessarily requires co-presence. Touching does not always take place in the context of an intimate relationship and can, of course, be violent and abusive. Nevertheless, physical proximity and touch often indicate and complement other demonstrations of intimacy, including other ways of showing and giving care. For example, emotional intimacy is expressed in hugs of affection or more fleeting touches of comfort. Many emotionally charged relationships inevitably involve physical intimacy. This is true for relationships between young children and their parents or main carers. Across many cultural contexts, the notion of 'the good mother' and, in some, also of 'the good father', means being physically there to give children affectionate hugs

and hands-on attention. When people require physical care, the receipt and delivery of practical acts of care for the body without any care for the person can be experienced as problematic by both carer and cared for (Twigg, 2000). Urry (2002) reminds us of the significance of eye contact and touch in developing intimacy, through heightening the possibilities of mutual attentiveness and facilitating the development of trust. Even when computer-networked digital cameras allow people to see each other in real time throughout Internet talk, digitally mediated processes of 'getting to know' another are clearly disadvantaged in comparison to face-to-face relationships. Trust in an unseen other is even more problematic as advice on netiquette routinely warns (see also the documentary drama *Catfish*, 2010, directed by Henry Joost and Ariel Schulman).

Sometimes intimacy is used euphemistically to mean sexual contact. The ideal-typical sexual relationship celebrated in 'western' culture combines physical and emotional intimacy in a 'relationship'. Cybersex is a term that has been used very loosely but is increasingly confined to real people engaged in sexual and erotic interaction with each other, most often simulated sex talk, in real time often using computer-mediated environments explicitly for this purpose (Attwood, 2009; Daneback et al., 2005; Waskul et al., 2000; Waskul, 2002). Although sex-related Web use is not definitively quantified, evidence suggests that its use for pornography and for finding and meeting sexual partners in person significantly outstrips its use for 'cybersex' (Daneback et al., 2007, 2007). A multi-million pound sex industry has been facilitated by the Internet, involving the massive expansion of previously existing commercialised sexual practices, particularly prostitution and pornography (Altman, 2001; Bernstein, 2007; Jeffreys, 2008). The Internet has also provided new spaces for finding a 'date', whether as short-term (sexual) playmate or potential life partner (Jagger, 2001, 2005, Lawson and Leck, 2006; McKenna, 2007; Pascoe, 2009; Whitty and Carr, 2006). As the next section discusses further, there are no signs of digitally mediated forms of engagement with sex threatening to reshape or replace 'skin on skin' sexual relationships.

Mediation and modification of personal life: Imagining and seeking intimacy

Stories of romantic love are one of the most persistent and pervasive stories about personal life; old and new versions have global circulation in mass media culture. The dominant conventional heterosexual

script of masterful men winning love and sex from grateful women is shadowed by subversive alternatives. Analysis of such message content, for example, of portrayals of gender and generation in stories emergent from Hollywood and Bollywood, does not in itself tell of their impact on personal relationships. As Morley (1986) argued for TV, neither the pattern of media viewing nor the sense that people make of what they view can be understood outside of the social context, interactions, activities and talk in which it occurs. Undeniably, however, hegemonic storylines are a source of information and inspiration that people work with within the context of their own lives when forming their own understandings of the possibilities of personal relationships. It is theoretically impossible to disentangle the specific impact of media messages but their impact is widely acknowledged. For example, in their analysis of gender, power and emotion between British couples, Duncombe and Marsden made reference to the influence of popular fiction on how men and women go about 'staging the romance' (Duncombe and Marsden 1995). As an edited collection by anthropologists notes, 'the global circulation of contemporary notions of "modern" love . . . are in continual conversation and occasional tension with traditional, local ideas of love and bonding' (Padilla et al., 2007: xxi). Mark Padilla and his coauthors suggest that contemporary mass media portrayals of intimate relationships are lending weight to a trend 'away from "traditional" notions of family that emphasize the role of social obligation in the reproduction of kinship systems' (2007: xv). However, the empirical studies within the text often continue to demonstrate a long-standing feminist complaint about love 'papering over', or legitimating and humanising, men's power over women. Mediated discourses about love and mutual intimacy may inflect subjectivities and frame embodied encounters but much more is required than access to romantic storylines to radically transform power relationships that are institutionalised in divisions of labour and distributions of resources.

Castells has suggested that the affordance of Internet technology fosters an autonomous self that works against traditional hierarchies, including patriarchal personal relationships (2007). Feminist theorising suggests that Castells underestimates the multiple roots of male power and the potential for resistance to gender equality to shift between private and public spheres (Walby, 1997). Research on young adults' romantic and sexual relationships, even in national contexts officially promoting gender equality, continues to find a rather mixed picture in terms of the transformation of conventional gendered heterosexual rules of sexual conduct. On the positive side, digital technologies have

provided new opportunities for flirting and getting to know potential sexual partners which are far removed from patriarchal dating systems in which men choose and women wait to be chosen. Moreover, for both young men and young women, electronic communication enables new ways of initiating flirting that are relatively safe and controlled (Doring, 2000; Miller, 2011), allowing 'managed vulnerability' and 'controlled casualness' (boyd, 2007; Pascoe, 2009). However, this has not led to a radical transformation of teenage sexual culture among 'digital natives'. For example, CJ Pascoes' school-based ethnographic study of Californian teens found a culture rich in homophobia and conventionally gendered heterosexuality, supported by institutionalised arrangements such as the school 'prom' (Pascoe, 2007). Something of my cynicism about 'cybersex' persists, resisting the frisson of excitement about liberation and innovation, transcending the body and conventional gendered sexual scripts. Besides creating new possibilities for safe spaces, levelling power, gender bending and queering, the Internet also affords an exponential expansion in the means of recreating conventional hierarchies of sexuality and gender.

Cybersex is close to pornography in the extent to which it separates sexual intimacy from other forms of intimacy albeit with more possibility for exceptions subverting this separation. A small number of qualitative research studies indicate that for participants in textual and televisual sexual interactions (Attwood, 2009; Waskul, et al., 2000; Waskul, 2002), anonymity without the risk of being recognised, which rendered cybersex invisible in the rest of their lives, was both an important condition of participation and an element of the excitement, allowing a lack of inhibition and heightening of eroticism. However, it was also a limitation acknowledged by men and women, restricting intimacy by constraining the extent to which 'the real self' can be known by others. Televideo cybersex typically shows all but the face, sometimes focusing down on participants' own and their playmates' genitals side-by-side on the screen. While players, women and men, report resultant sexual energy, a heightened sense of their own sexual desirability and sexual pleasure, complaints of the impersonality of being 'just another body' were also common. A study of male sex-chat room users suggests that the dominant way in which participants saw cybersex was as a form of play expressing desires, more akin to pornography and computer role-play gaming, than as a way to develop relationships with sexual partners. Yet asking about 'best experiences' elicited answers suggesting moments of intimacy: 'mutual pleasure', 'trust', 'meeting of minds', a partner 'with a real gift for dialogue' (Attwood, 2009). Although some participants in these studies talked of learning which could be taken

into a wider repertoire of sexual practices and even of finding out more of what the opposite sex liked, there were also participants who saw cybersex as quite separate from 'real life' sex. Those who spoke of 'trying out things' and 'acting out fantasies' they would not do in 'real sex', sometimes suggested that this helped their real sex lives either by therapeutically getting things out of their system and/or by heightening libido. These are also common justifications for using pornography and prostitution.

The, still limited, evidence suggests that cybersex is as likely to reproduce as it is to subvert conventional gendered heteronormative scripts. Men significantly outnumber women among heterosexual participants in televideo cybersex 'empowering' women by giving them the power to reject multiple suitors when deciding with whom to display their bodies (Waskul, 2002). However, empowerment merged with a feeling of being besieged by men clamouring for attention with exaggerated posturing of their macho-masculinity. Male participants acknowledged that hyper-masculinity was heightened by competition. Text-only cybersex enabled participants to verbally create and recreate multiple identities that were different from their everyday embodied sexual selves since there was no 'reality check', but participants typically constructed self-enactments and body performances that conformed to culturally prescribed standards of beauty and sexiness, reproducing rather than subverting conventions supporting hierarchies of gender, age and able-bodiment (Waskul et al., 2000, see also Slater, 1998). There was no obvious impact in terms of changed behaviour or sense of self for men who had tried out a female cybersex persona (Attwood, 2009). The use of conventions involving stereotypically gendered bodies is also characteristic of forms of online sexual play using avatars (Biever, 2006).

The promise of cybersex transformativity is far removed from the ways in which the Internet is a social actor in many people's sexual lives. The documented sex-related uses of the Internet are wide-ranging but the evidence suggests that pornography metaphorically and literally outstrips all else, with solitary online consumption of pornography while masturbating being the most common form of usage. Finding and co-ordinating meetings with sexual partners, with or without an element of payment (from 'mail order brides' and prostitutes to 'soul mates' and 'fuck buddies'), is also a major form of interface between the Net and sex. Other uses include information-seeking about sex, expressing sexual identity and communing with like-identified others, as well as seeking support for sex-related problems. The Internet enables some young people to transcend stigma and self doubt. It can enable forms of intimacy and support that would not be possible face-to-face.

As one gay young man put it, 'you can talk about things with people, and then not have to look them in the face again the following day' (quoted by Valentine, 2006: 383). In some cases it helps people to reach across social boundaries (Phua and Kaufman, 2003). However, it also facilitates exploitative relationships and sexual harm, and the dominant form of boundary-crossing may involve male residents of the rich world seeking sexual services from migrant women and boys from the poor world. The multi-million pound sex industry that has been facilitated by the Internet involves the massive expansion and more profound internationalisation of previously existing commercialised sexual practices, particularly of prostitution and pornography (Altman, 2001; Jeffreys, 2008), and also enables women to conduct sex work on better terms (Bernstein, 2007). Much of this follows conventions that preceded the Internet, transforming the scale and efficiency of advertising, distribution and delivery systems, allowing the relatively rich access to the bodies of the relatively poor, as well as facilitating 'soul mates' between equals. In other words, there is no clear storyline of radical change or transformative impact arising from the opportunities of developing personal and sexual relationships with unknown others afforded by digital technologies.

Mediated relationships: Keeping and deepening intimacy?

What about the impact of digital technologies on established personal relationships with a face-to-face history? Many of the more pessimistic and dramatic predictions about the impact of digitally mediated relationships on personal life have not come to fruition. Researchers now argue that everyday face-to-face relationships, now re-described as 'off line' relationships, are not displaced by electronically mediated and virtual 'online' relationships. The growing body of research typically provides a much more nuanced picture of positive and negative effects as digital technologies have become integrated into mundane everyday practices (Baym, 2010; Gershuny, 2003; Wellman and Haythornthwaite, 2002; Kennedy and Wellman, 2007; Livingstone, 2008; Mesch and Talmud, 2010; Miller, 2011; Miller and Slater, 2000; Tyler, 2002; Wajcman et al., 2009; Wellman et al., 2006).

Some studies have focused on the presence of media message-emitting devices on relationships within the domestic setting of the home. For example, Lim's study of middle-class families in China and South Korea found that both TVs and computers were experienced as enhancing family time and family life, consistent with Morley's description of TV as

the 'family hearth'(Morley, 1986) . In a nice reversal of the complaint often heard in the United Kingdom about children turning away from books a Beijing mother commented, 'We all get together to watch TV and chat. Otherwise, he (my son) will just read his books and ignore us' (Lim, 2008: 200–201). With reference to work on children and parents in the United Kingdom, Valentine suggests that here too Internet communication technologies 'have become the glue that binds some families together' (2006: 317) through interaction between parents and children around the computer screen. In Europe, however, the work of Sonia Livingstone (2009) documents a trend to privatised solo use of computer technologies consistent with living together and spending time apart rather than sustaining 'a family hearth'. She notes the advancing disappearance of family TVs and computers with the growth of individually used devices in the personal space of bedrooms. Lim's work suggests that, as yet, media-rich middle-class Asian family households are not observing the disappearance of children into the 'bedroom culture' that Sonia Livingstone identifies. Rather, TVs and computers remain in living rooms, shared studies or parents' bedrooms and not in children's rooms. The authors suggest that the placing of computers and TV partly reflects strategies adopted to cope with pressure on space but also parental determination to supervise and control children's media usage.

Globally, a significant volume of computer-mediated and mobile phone communication is with family and friends, including, in at least some parts of the world, between those who are co-resident and see each other every day. Social networking site advice recommends restricting 'friends' to known others and, as Holmes (2011) observes, rules of friendship etiquette generally follow those of the offline environment. It is now widely acknowledged that the mobile phone in particular can create a sense of constant connection with others which blurs the boundaries between presence and absence (Wajcman, 2008). An early concern about the possible consequences focused on whether paid employment would further invade and undermine domestic and family life. Constant connectedness means that technically this is no more likely than relationships 'at home' looming larger 'at work'. In practice, gender and orientation to employment shape what happens, not just the technology. Judy Wajcman notes that over time, 'it may be that the spatial, organisational and even psychological borders between time at home and time at work will lose its salience' (Wajcman, 2008: 69). The possibility of constant communication brings new opportunities of enacting attentiveness and care across distance. As Daniel Miller and Don Slater (2000) demonstrated with respect to diaspora

Trinidadians, when 'small talk' or phatic communion is an important aspect of being part of a relationship, friendship group or community, then the mobile phone and the social networking website can enable those who are physically absent to nevertheless take part. Not surprisingly, given the high rates of adoption of mobile phone use as a supplementary or complementary means of communication, those who are socially rich in face-to-face personal relationships are often also rich in digital relationships. As Valentine (2006) puts it, for both those living together but spending more time apart (living together apart) and families and relationships that think of themselves as a unit despite separation over distance (living apart together), such technologies assist intimacy by providing 'new ways of doing old things' (Tyler, 2002). Similarly, research on the mobile phone has not found wholly eroded personal privacy or 'families without borders' stripped of any separation from paid employment and commercial exploitation.

It has been suggested that the possibility of constant connectedness afforded by the mobile phone and computer-mediated communication can create new forms of intense intimacy, increased burdens of expectations and new opportunities for surveillance and control. Based on the detailed analysis of large-scale surveys of the nature and timing of mobile phone calls of the Australian population, Judy Wajcman and her co-authors argue that awareness of the constant possibility of communication creates an enhanced sense of connection and heightened intimacy. In practice the mobile phone is most often used for micro-coordination – 'when will you be home?', 'could you pick up some bread?' – but even such mundane calls intensify a sense of linked lives. They suggest that keeping in touch while apart not only is a marker of intimacy but also helps to constitute intimacy (Wajcman et al., 2009: 636). Lim's smaller sample of the use of the mobile phone in Asian families found examples of mediated communication enhancing intimacy typically involved text messaging. She notes, 'Amongst the Chinese and Korean families studied, a father–child distance was still palpable and technologically mediated communication often helped to bridge that gap.' She also includes examples of 'more playful and uninhibited communication that may have been difficult or awkward to initiate face-to-face' between spouses (Lim, 2008: 119–200). In Lim's analysis the affordances of mobile phone technology enable communication that is outside of the rules inflecting face-to-face communication. Text messages are not bound by the cultural conventions ensuring that appropriate respect is given to age and gender hierarchies that still govern idealised family relationships in Asian societies; in other words,

divergence from these rules is possible in text messages without the loss of face that this would incur for the father/husband in a face-to-face situation. Hence text can be used to be conciliatory to a child or sweet-talk to a partner when this would risk showing weakness face-to-face. Studies of teenage personal relationships also suggest new and enhanced practices of intimacy through the combined use of mobile phones, instant messaging and social network sites (Pascoe, 2009).

At the same time, the new technologies bring new burdens of expectation. In such relationships, friendship groups or communities, a failure to deliver regular messages may no longer be excused by absence but rather may be read as evidence of a lack of care. Sonya Livingstone comments on how the frequent posting of messages on friends' sites by young people in the United Kingdom has become 'necessary to reaffirm one's place within the peer network' (Livingstone, 2008: 404). Young people's use of social networking sites creates a personal profile that is constantly visible to those who are listed as friends on their site. It is common for young people to post daily updates about themselves for their friends, and as Pascoe notes, their social networking site profiles are 'key venues for representations of intimacy, providing a variety of ways to signal the intensity of a given relationship both through textual and visual representations'. This also means that young people have to manage their own and their ex's public visibility during breakdowns and re-formations of romantic and friendship relationships. The mix of family, friends and work colleagues that are 'friends' on social networking sites also creates new emotional demands, requiring people to think about dilemmas of de-friending and possibilities for embarrassment and offence (Holmes, 2011; Miller, 2011).

Just as in face-to-face talk, however, mediated communication has many more registers than those contributing to the deepening of intimacy. Both face-to-face talk and mediated communication can be deployed in the exercise of control, surveillance or forms of governance. Also as with unmediated talk, the possibility exists of mismatch in how parties to the relationship interpret their communication. In the United Kingdom, there have been a number of studies noting that parent–teenage talk claimed as evidence of intimacy by parents can be seen as surveillance by the child (Solomon et al., 2002 see also Kurz, 2006 in the US). The work of Ling and Yttri (2006) suggests that children's experience of their parent's mobile phone calls is largely in terms of surveillance and control. Similarly, Miller (2011: 176) speaks of the discomfiture of children whose Facebook pages are scrutinised by their parents. The possibility of the intimacy of constant connectedness

morphing into the oppression of constant surveillance is also registered in research on teenage romance in the United States, which documents the practice of the mobile phone serving 'as a "leash" through which teens in a relationship keep "tabs on" one another' (Pascoe, 2009). Similarly, the pressure to demonstrate intimacy and trust by sharing social networking site passwords also has the effect of allowing monitoring of private spaces within the site, and a sense of being monitored and not trusted can in turn undermine intimacy.

Conclusion

With some refurbishment, classical interactionist accounts of the self can remain fit for a theoretical purpose in a digital age, despite seeming to take face-to-face personal relationships for granted as ontological necessities. It is, indeed, premature to theoretically uncouple self-formation and face-to-face personal relationships, despite the refurbishment required to understand the development and maintenance of selfhood in 'globalised' digitised worlds of disembodied discourse and mediated relationships. The key roles given to family and friends as the 'significant others' developing ontological security, particularly in childhood, cannot be plausibly replaced by selves shaped exclusively by discourse in a 'network society'. It remains difficult to imagine the apparatus of ontological security without face-to-face intimate relationships. However, now the key parts played by family and friends are typically conducted 'online' as well as in the more conventional face-to-face 'offline' interaction. Discourse plays a part in shaping and framing, but it does not trump the embodied real-time interaction with intimate others.

Co-presence also remains important to the development of intimacy, in the sense of feeling close to and in a special relationship with another, although for adults, co-presence may be neither a necessary nor sufficient condition for some intimacy. The opportunities for building intimacy remain more limited without co-presence and are largely restricted to verbal/textual self-disclosure, despite the proliferation of non-verbal digital gestures. A repertoire of practices of intimacy is normally required to create 'thick' intimacy and sustain long-term relationships as intimate. Intimacy based solely on verbal disclosure without any history of co-presence is likely to be experienced as 'thin' and one-dimensional, even compared to intimacy developed through silent co-presence. Moreover, intimacy without co-presence is liable to feel wanting if either party to the relationship yearns for physical contact

or practical care, or if cultural norms emphasise a more literal 'being there' for each other.

This is not to suggest that no or minimal consequences flow from the interactions of digital technologies and personal lives. Increasing numbers of personal relationships are initiated by digital technologies, some remain within the digital and the proportion of key face-to-face personal relationships entirely unmediated by digital technologies is shrinking. However, the 'consequences' or 'impacts' of digital technologies are not typically outcomes determined by technologies, but emergent from lives as lived in interaction with technologies. For example, 'Asian family solidarity' is expressed around the computer screen rather than created by it and UK families express 'living together apart' pursuing separate digital agendas with separate devices in different parts of their home without such devices being the primary cause. The backdrop of conventions concerning the conduct of friends and family and friendship practices and family life as lived modify the affordances created by the new possibilities of digital communication. For example, cultures experienced as requiring deference between genders and generations to such an extent that face-to-face emotional expression is inhibited afford greater opportunities for devices offering digitally mediated verbal or textual communication to open up radically new possibilities of expressing emotion. Similarly, the possibility of experiencing digital phone communication with intimates as sliding between intensified intimacy and surveillance reflect tensions in family and friendship relationships that are more acute in cultural contexts where parents want to be like friends and retain control. Science and technology studies show that computers and mobile phones play an active part in social systems shaping lives; personal relationships are also social systems that modify the powers or 'affordances' of digital technologies.

Cybersex creates an imaginative physical intimacy but usually using conventionally gendered scripts, and in action experienced as play and fantasy rather than authentic personal and intimate relationships. Although cybersex involves interaction, the tendency to reduce people to 'just another body' brings it closer to the much more common use of the Internet for pornography than to Internet dating, the other major way in which the Internet connects with sexual lives. Internet dating is typically used with the intention of quickly progressing to face-to-face meeting in search of the right 'chemistry' to sustain a co-present relationship. While acknowledging the contribution of the Internet to the explosion of discourse about sex and opportunities for sexual knowledge and contact, none of the uses of the Internet for sex suggest a

trend of radical transformation likely to displace 'skin on skin' sex. Also, neither dreams of intimate and equal relationships inspired by globally circulating discourses of love between mutually caring partners nor participation in cybersex that potentially extends possibilities of sexual pleasure without favour by gender are incompatible with systems institutionally sustaining inequalities between men and women.

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2

‘Gendering the Digital’: The Impact of Gender and Technology Perspectives on the Sociological Imagination

Eileen Green and Carrie Singleton

Introduction

This chapter makes the case for a gendering of the digital age, arguing for increased recognition of the gendered dimensions of the digital in everyday life. Over the years, a large corpus of theoretical and empirical work on gender and technology has emerged with valuable contributions from feminists and sociologists alike (Wajcman, 2004, 2007; Wyatt, 2008). This work has had some notable impacts, including theorising the social shaping of technology through developing understandings of the mutual shaping of gender relations and technology; framing debates on gendered identities and technology and opening up the gendered dimensions of ICT work, access and use. Significantly, some of this work has pushed forward political agendas for gender equality, in particular, by focusing on women’s agency and use of ICTs for emancipatory ends. Yet, in spite of these contributions, and the evidence provided, gender is often rendered invisible in macro-theorising about social and technological change and indeed in many empirical studies of ICT use. This chapter aims to address this omission by asking critical questions such as: in what ways is gender being reworked in everyday life in the digital age? How do we interpret and explain contemporary complexities and contradictions of gendered technology access and use? Why is gender frequently invisible in mainstream digital age theorising? How do we explain the persistence of deep-rooted gendered inequalities in the digital age? And, what future research pathways might be developed to address such issues?

Our argument has three parts. Firstly, we suggest that developments from within feminist sociology and feminist studies of technology would greatly benefit from further cross-pollination. As feminist sociologists, we argue that there is a need to address the new theoretical challenges raised by the digital age. Feminists need to continue asking pressing questions about the status and visibility of core areas of everyday life in the digital age, for example, gendered care work, domestic labour, emotional work, family, friendship, community and leisure and the ways in which new digital technologies are reshaping these arenas. Moreover, we suggest that feminist technology theory would greatly benefit from the insights developed in feminist sociology, particularly those provided by sociologists' scrutiny of everyday life, as a means of grounding gender and technology firmly within social and material relations. Jackson's (1999: 2.4) cautionary appeal, issued to feminists over a decade ago, about the dangers of losing sight of 'the materiality of social relations' is important here. In focusing too closely upon concepts such as fluid virtual identities and virtual spaces that potentially empower individuals to challenge gendered inequalities, we risk losing sight of the specific social contexts and changing social relations within which such individuals and virtual spaces are embedded.

Relatedly, the second part of our argument explores sociological interpretations and descriptions of the digital age. New digital technologies,[1] it is said, are shaping (and being shaped by) our everyday lives, splicing home/work spaces, enabling emotional labour and domestic obligations from remote spaces and reassembling modes of sociality and connectedness. It is notable that some characteristics of the digital era overlap with those of The Information Age, in particular around the fluidity and flexibility of time and space and reflexivity and individualisation of social and personal relationships. Perhaps a major defining characteristic of the new era relates to 'digital sociality' and the novel forms of connectedness and belonging that have emerged. Yet, crucially, it is across these key arenas – time/space, personal relationships, sociality – that a gender lens is vital.

This characterisation of the digital age as fluid and flexible resonates in some ways with post/late modern notions of social relations as fleeting, transient and fragmented and gender as mutable and elected. Yet, feminist sociologists have problematised ideas about fragmentation, flexibility and fluidity as apolitical and ahistorical, anti-materialist and anti-realist (cf. Jackson, 1999; Delamont, 2003). Adkins (2004) stresses the danger of mistaking reflexivity for freedom: freedom to rework

gender is not necessarily freedom from divisions and inequalities configured through and around gender (and linked categories). Empirical research on gender and technology, including, for example, our own work on mobile phones (Green and Singleton, 2009), which unpeels the layers of complexity in everyday life, consistently reveals enduring gender relations/dynamics (for example, the reproduction of gendered divisions of labour and the burden of remote mothering) and elsewhere, continuing inequalities in the workplace (such as few women in the ICT sector) reshaped in new social contexts. Topics such as the workplace and home that occupied feminists in earlier decades remain as important as ever in the digital age.

The final part of our argument concerns theorising the connectors between theory and empirical accounts of gender and technology. This chapter raises a fundamental concern that both gendered social interaction and gendered structural inequalities could potentially become obscured by the digital age unless we strengthen links between feminist theory, the sociological imagination and experiences of the digital in our everyday worlds. We need to view the digital as a significant lens through which sociologists can continue to analyse the localised nature of everyday life, including gendered behaviours and contexts, rather than becoming dazzled by the shiny new vista that the digital age appears to open up. Exercise of the sociological imagination is essential to the interpretation of the digital in critical and creative ways.

Our overall aim then is to make the case for a *gendering* of the digital age. In doing so, we begin by sketching the key contributions of feminist sociology and feminist theories of technology to the project of digital age theorisation. Drawing upon our own empirical research, we proceed to discuss the influence of digital technologies, specifically mobile phones, upon personal relationships, a key area of sociological interest, presenting case study data in order to elucidate the micro-social relations of gender and linked configurations of femininity and masculinity in everyday life. In conclusion, we contend that in the *gendered digital age*, gender and the digital are not distinct domains but are mutually and continually shaping and reshaped. This 'age' is characterised by gendered complexities, contradictions and tensions, which potentially open up new possibilities for gender equality, but it is also an age in which we must not lose sight of both broader structural inequalities and localised differences (Jackson, 1999). Combining feminist theory with the sociological imagination will sharpen digital age analyses from the micro-social arena of personal relationships in everyday life through to 'grand theory'.

Gendering the digital turn: Background debates

In post-industrial, consumer-based Western societies, new digital technologies are playing an important role in shaping contemporary social relations, (re)configurations of identity and community and modes of sociality. Social shaping theory (SST) has shown us that technologies are socially contextualised and that their design, development, utilisation, domestication and rejection are shaped by contemporary social relations (Silverstone and Hirsch, 1992; MacKenzie and Wajcman, 1998). Yet crucially and often overlooked, these relations are also gendered. Here feminist theorists of technology have importantly demonstrated that the social processes inherent in technological development, uptake and use are gendered (Green and Adam, 1998), which in turn has significant implications for the shaping and reshaping of gendered identity and gender in lived social relations (Adkins, 2004).

Feminist theories of technology

A brief overview of feminist theoretical contributions to the digital age is necessary here to set the parameters of debate within the chapter.[2] Early feminist theorisations of gender and digital technology, from a range of disciplines, tended to bifurcate into overtly positive or negative theoretical and political positions, with some emphasising the digital (the Internet) as a means of overcoming gendered inequality and others adopting a more technophobic approach which stressed the inherent masculinity of such technologies and urged women to resist patriarchal oppression through feminist forms of engagement with the digital revolution.

Identity has been one of the most keenly debated arenas in the field of gender and technology studies, in particular, the radically transformative potential of the Internet in shaping a 'gender-free' future. Plant's (1997) groundbreaking (albeit controversial) work in *Zeros and Ones* re-conceptualised the digital revolution as liberating for women. Here the Internet as a feminine technology destabilises hegemonic patriarchy from within and offers endless virtual possibilities for women. Cyber-optimism was most distinctively encapsulated by Haraway (1985) who used the cyborg metaphor to argue that women need to harness the opportunities provided by technoscience as a route towards emancipation. Similarly, a major theme explored by Sherry Turkle in *Life on the Screen* is that of digital identity and the Internet as a new digital sphere in which women could explore, resist, subvert and create new subjectivities and identities. However, more recent research demonstrates that the [re]negotiation of gender in online spaces is not the utopian project

envisaged here. There is a wealth of evidence to suggest that sexism and other intersecting forms of inequality have been reproduced in the digital era. As observed a decade ago (Green and Adam, 1999) and confirmed by more recent research on weblogs and blogging (van Doorn et al., 2007), individuals' online identities more often than not reflect offline or real world masculinities and femininities.

Another focus for feminists has included the gendered nature of technological artefacts (Oudshoorn et al., 2002) including leisure-based technologies (Green, 2001). This has been important in reasserting the materiality of gender and technology relations and interrogating representations of gender in consumer goods and advertising and from design to domestication. Other feminist endeavours have focused on the social and cultural uses of technology and the linked political implications of use for women in the digital era, including, for example, exploring the benefits of online women's support groups (net-based forms of empowerment), women's use of cybercafés and women organising and petitioning for change online (Shade, 2002). This emphasis, whilst important, tended to focus in on the potential of the technology itself or the ways in which women were accessing and utilising technology, rather than broader sociological debates about the implications of technology for gendered social relations. For example, it is clear that through the use of cybercafés and membership of online support networks, and most recently through the use of Web 2.0 applications such as Facebook and Twitter, many women are also continuing to perform the work of sociality, family and friendship; and it is in understanding and articulating the enduring and pivotal importance of these gendered social relations that sociology has much to offer studies of the digital. In addition, it is through such micro-sociological analysis that we make visible the evidence of 'doing' gender, that is, gender as process. Underlining arguments first voiced a decade ago (Green, 2001), we need to focus upon the everyday in order to understand the relationship between processes of technological innovation and the ways in which various ICTs are consumed and become domesticated. Rather than concentrating upon the potential of the digital to achieve the extraordinary, we need to remember that it is the capacity of ICTs, for example, mobile phones and social networking via the Internet to become a routine part of and re-construct perceptions of what constitutes 'normal everyday life' which is important.

One of the main contributions by feminists to sociological understandings of technology is that of technofeminism (Wajcman, 2004), a theoretical perspective which meshes cyborg feminism with a social

constructivist theory of technology. In doing so, authors such as Wajcman steer an even course through the polarised positions of technophilia and technophobia to reach a more nuanced analysis of gender and technology which states that the gender–technology relations are mutable and flexible. Furthermore, Wajcman identifies feminist politics rather than technology itself as the way forward in creating gender equality. In spite of the impact of these feminist-inspired perspectives in SST, mainstream sociological theorising about the Information Age has remained gender neutral (Wyatt, 2008), raising important questions about the impact of critical insights from feminist SST and feminist sociology on mainstream theorising in general. Following Wajcman, Wyatt suggests that it is feminist politics, not technology, which is essential to the realisation of gender equality, and both appeal for more nuanced social studies of technology as a method for revealing the complexities of gender relations and inequalities.

Our digital times

In the most recent chapter of our digital times, we argue that there is a need to grapple with some interesting, complex (and sometimes contradictory) empirical and theoretical gender–technology issues. For example, there are some thought-provoking overarching trends relating to gendered access, uptake and use of ICTs. Whilst UK statistics continue to demonstrate that men have maintained greater access to the Internet than women and more men use the Internet on a daily basis than women, women, especially young women, are nonetheless using the Internet in relatively high numbers and for a variety of purposes (including contacting family and friends) and often derive pleasure and enjoyment from its use (ONS, 2011). Moreover, women use a fixed-line phone more regularly than men, although use of mobile phones is roughly equal (Ofcom, 2008). There is evidence that although the broad gender gap on Internet use is closing, newer and more complex gaps are opening, configured around, for example, the intersections of age, class, disability and gender (Liff and Shepherd, 2004; Ofcom, 2011; ONS, 2011). Furthermore, in-depth qualitative studies of gender and Internet use, especially around communication and the performance of gender in virtual spaces, have enabled us to witness these complex intersections as they are lived and experienced in everyday life (Green and Singleton, 2009; van Doorn et al., 2007).

One of the most recent debates to emerge within the sociology of technology is the importance of developing a sociological understanding of Web 2.0 (Beer and Burrows, 2007). Beer and Burrows

capture the excitement generated by the proliferation of sites badged under the concept of Web 2.0 (e.g. wikis, folksonomies, mashups and social networking sites such as MySpace, Facebook and Twitter), addressing the need for sociologists to engage with developing online technologies lest we be left behind in the race to understand their significance and social impact. However, in their plea for the need to both get inside of new online communities in order to observe what is going on and describe it, and to 'technologize ourselves more' (2007: 2) as sociologists, it could be argued that they are in the danger of neglecting to ask bigger questions about the social nature and meanings attached to this form of activity. Whilst they were right in observing the fact that Web 2.0 technologies would (and now have) become part of mundane everyday life, any narration of the gendered aspects of such online behaviour is absent. Although research on gender, identity and Web 2.0 is beginning to appear, for example, the performance of gendered identities via weblogs (van Doorn et al., 2007), it still falls to feminists to put gender (back) on this (new) research agenda. Whilst it is obvious that the concept of 'friends' has become transformed and some would argue, devalued and commodified, as users compete to become the 'richest' and most popular 'friend' on social networking sites such as Facebook and MySpace, we know little about the ways in which this medium may have altered gendered social relations between and across different age groups of users/adopters.

Innovative research on weblogs (Herring et al., 2004; van Doorn et al., 2007) has explored the practice of blogging, which offers a new forum for the presentation of self and in principle enables weblog authors to present more fluid online identities. van Doorn et al. (2007) argue that although weblogs appear to facilitate diverse and multiple expressions of gender identity and provide an important forum for men and women to represent themselves in flexible ways that blur gender differences, the majority of weblog narratives remain closely tied to the binary gender system. Their research suggests that although weblogs may encourage men to alter their traditional performance of masculinities by adopting the historically feminine skill of diary writing in the form of personal life blogs, 'the presentations of gender identity on weblogs remain closely related to the idea of a 'real life' self and the everyday experiences that form it' (van Doorn et al., 2007: 155). Equally, by simultaneously adopting weblogs which the media has constructed as masculine (Herring et al., 2004), and constructing lifelogs (everyday diaries), women are positioned at the 'intersection between the traditionally feminine

act of diary writing and the traditionally masculine environment of ICT' (van Doorn et al., 2007: 147). This represents a good example of the tension between the re-inscription of traditional masculinities and femininities and the potential challenges to such binary oppositions provided by contemporary ICTs. However, becoming distracted by the 'novelty' of digital innovations draws attention and analysis away from key questions such as how Web 2.0 and digital technologies more generally have changed social networking and the meanings attached to such social interaction. In order to understand how friendship may be reshaped as it interfaces with ICTs, we need to engage with sociological understandings of leisure and friendship (Green et al., 1990; Spencer and Pahl, 2006).

In attempting to fine-tune contemporary understandings of these complexities, some feminist technology theorists have looked to debates on intersectionality to explain difference of technology use (Kennedy, 2005). Insights from feminism and postcolonialism have also been useful in shaping contemporary feminist perspectives on technology. Harding (2008) argues that institutions of modernity, with their scientific and political philosophies, have persistently created fearful spectres of the 'feminine' and the 'primitive'. Here Western scientific and technological progress is measured in terms of distance from these spectres, raising questions about whom this 'progress' benefits. Critical analyses of technology, including those of the digital age, need to engage with the social and political applications of technology through a feminist lens.

Simultaneously, feminist sociology has underscored the challenges posed by the cultural turn (Jackson, 1999) and debates on intersectionality and complexity, the latter highlighting that whilst recognition of the intersections of, for example, gender, age, class and ethnicity are important in understanding complex inequalities, the turn to more postmodern notions of intersectionality via identity is problematic due to relativism and fragmentation (Walby, 2007). The question here is how we understand a range of complex gender issues including the co-existence of reshaped, blurred and traditional gendered identities in digital spaces, and structural inequalities in and through technology use and the localised and different contexts in which these are played out. The following case study material demonstrates why a theorisation of gender remains salient for the contemporary sociological imagination as it interprets the digital turn. It aims to contribute to the understandings of 'gender in' and the process of 'gendering' of the digital age.

Gendering the digital turn: Mobile phones in personal relationships

Technology use and social connectedness

Mobile phone use has become a popular empirical research area across the different social sciences perspectives including sociology. Mobile phones have been conceptualised as a technology of connectivity, as well as technologies of safety and emancipation, enabling users to connect with family and friends throughout the day and night (Ling, 2004). The place of technology in the maintenance of personal relations has a long history, with technological advancements associated with modernity making contact between both proximate and more remote relations less expensive, faster and easier. Recent research on 'mobilities' has shown that although people are travelling more, they are also more connected through communication technologies, which raises interesting questions about the geographical and emotional proximity embedded in gendered social relations and the extent to which people require face-to-face contact to feel emotionally close to friends and family (Urry, 2007; Larsen et al., 2006; Urry and Sheller, 2006). As argued earlier, friendship in general is also thought to have undergone significant changes, with friendships being maintained, and in some cases formed, through digital media, enabling people to stay in touch with friends both locally and globally with relative ease.

Moreover, there has been continuing sociological debate about the nature of contemporary personal relationships, particularly around the types of relationships replacing traditional bonds of solidarity formed around kin, community and neighbourhood (Spencer and Pahl, 2006). Whilst some theorists postulate that contemporary personal ties are more fragile, superficial and transient than ever before (Beck and Beck-Gernsheim, 2002; Bauman, 2003), others maintain that friendships have become increasingly significant as meaningful arenas of social activity (Allan, 1996). Indeed Spencer and Pahl (2006) observe that although individuals tend to have more fluid networks of intimates, characterised by greater choice and diversity regarding whom they associate with, and the duration, meaning and purpose of the tie, they are, nonetheless, committed to maintaining enduring and meaningful solidarities. Debates on the family also reflect these broader shifts towards fluidity, choice and de-territorialisation (Smart, 2008); however, there has been less reflection on the place of technology in supporting family and friendship connectedness and interaction and the gendered dimensions of these interactions.

In Network Society theorisation, social networks are seen as disanchored from place and time offering individuals the freedom to pursue new modes of sociality in digital spaces (networked individualism). Here, individuals can interact in 'communities of choice' with others who share their interests and affinities (Castells, 2003: 132). This raises interesting sociological questions about gender relations and gendered communication, not least how virtual sociality meshes with motherhood/fatherhood roles and family and work obligations which are often rooted in place and time. Furthermore, Wajcman (2004) is critical of Castells' conceptualisation of community, arguing that community relations – historically women's work – are being replaced by masculinised and networked Internet communities, which are free from (place/time-based) domestic and family responsibilities. This foregrounds important debates about women's access to networked Internet communities and networks of support more generally whether virtual or place-based. Our own empirical research, and that of others, demonstrates that mobile phones are a key type of technology in which gender relations around family, friendship and work are inscribed and revealed, particularly when we focus on personal relationships and 'doing' family, friendship and community.[3] Research (Frissen, 1995) repeatedly confirms that both landlines and mobile phones are used by more women than men for care-giving and emotion work purposes, especially maintaining family and friendship relations and interpersonal connectedness (Wajcman et al., 2008).

The next section draws upon findings from a qualitative study of mobile phone use and the meanings attached to this particular technology for young Pakistani–British women and men. Research participants were recruited from a town in the north-east of England between December 2004 and April 2005 and the discussion focuses upon six women's and three men's focus groups involving 47 participants aged between 14 and 25 years (29 women and 18 men). This research confirmed that in spite of our access to an ever expanding range of digital technologies, many of the gendered dynamics of technology-mediated sociality remain remarkably consistent.

The gendered dimensions of mobile sociality

Rather than focusing only upon the extent and type of connectedness, our own research has pinpointed the meanings associated with connectedness to friends and family afforded by mobile phones, which were often different for men and women. Our data revealed a complex blend of socio-technological meanings and practices, reflecting our

conceptualisation of the digital age as both blurring and re-inscribing gender identities. For some, but not all, of the men in our research, mobile phones were primarily associated with the status of being a 'well-connected businessman' with extensive social networks and contacts. This group of men had been friends with each other for many years and after having left school, most had gone into their family businesses in the local area. Mobile phones were represented here as a 'necessity' mainly for instrumental rather than expressive use in maintaining contact across multiple social ties, including business networks and were part of 'doing masculinity'. Often these networks were broad and overlapping and featured a large number of instrumental ties, linking with research which suggests that since men's lives are typically more public than women's, this brings them into contact with a wider network of people through work and leisure (Allan, 1996).

Although women also talked about mobile phones as a necessity, in this particular study they had a different social value and tended to be used for family and friendship, rather than employment and business purposes. This builds upon research on landlines which confirmed that many male research participants were less participative in the 'labour of communication' mediated by the telephone, viewing this as 'women's work' (Lohan, 2001: 201–202). In our research men's perceptions of how they talk and text tended to differ from the women's; their information exchange was short, direct and action-oriented (a brief call to arrange a gathering for example) whereas women's mobile talk was often viewed as lengthy, time-consuming and intimate, and was described as 'gossip' and 'idle chat' (Frissen, 1995). This links with other research on men's friendship which shows that whilst men and women both desire intimacy, men identify activities as the main focal point of friendship whereas women identify relational aspects such as 'talking' and sharing common ground with close friends (Allan, 1996; Green, 1998). It appears that such gendered social relations are similarly reflected in their use of technologies, with mobile 'gossip' oiling the bonds of female friendship.

It was the earlier research on the telephone, however, that was key to making the insightful links between gender, community and technology use. This work conceptualised the phone as a gendered technology and underscored the importance of fixed-line telephones in the maintenance of friendship and intimate relations, particularly for women (cf. Frissen, 1995). Moyal (1992: 87), for example, identified a 'dynamic, feminine culture of the telephone' where the telephone is '. . . part of a cultural shaping process; it is part of the discourses in which gender

identities are constructed . . . '. Thus, women were not only frequent talkers with both family and (often female) friends but also crucial actors in the system of social support maintained through (technology) phone use. Additionally, Rakow (1992: 87) found that although women were carrying out critical social support via the telephone, women's 'talk' was often devalued as 'chat' or 'gossip'. However, as recent debates about the changing nature of communities and 'the local' suggest, women's 'gossip' remains a key social process in cementing community, family and friendship ties (Morgan, 2005). Increasingly, this connectedness is achieved through new ICTs including the Internet and email. Despite some trivialisation of women's telephone behaviour therefore, it can be argued that it forms the backbone of social connectedness and communication.

In our own research, we found that the young people were engaged in the work of 'doing' digital communities through their mobile phones; that is to say that they were actively engaging in personalised networks of communication which included family members, friends and acquaintances across local and global spaces which were facilitated by digital technology use. The young women in particular used mobile phones in ways similar to the telephone 'neighbourhood' (Moyal, 1992) identified in earlier research and they constitute a pivotal space in which 'girl talk' takes place in the form of both conversation and texting (Coates, 1996). Women's mobile communications include the sustained exchange of friendship texts, jokes, gossip and general chat into the night: all aspects of 'doing friendship' through women's talk. These young women transmit 'gossip' texts, often in the form of personal and social information or enquiry, across the mobile network to share their experiences and reinforce intimacy in their personal relations. Far from being superficial and arbitrary messages, these texting conversations are devoted to the creation and maintenance of meaningful personal relationships and belonging. The exchange of intimate 'friendship' messages in this particular mobile phone ritual confirms the young women's status as close friend and they are also doing the groundwork for maintaining community in adult life. Moreover, the men themselves talk about being more connected via mobile phones raising questions about the impact of new digital technologies upon contemporary forms of masculinity. This resonates with Rakow (1992) early assertion that mobile technologies both blur and re-inscribe gendered identities and modes of communication.

Life transitions such as marriage and parenthood also reshape technology use and often impact upon women and men in different ways.

For example, our discussions with a group of young married mothers revealed interesting relationships with their mobile phones which changed as they entered into marriage and motherhood. Although the mobile phone remains important to the young married women as a communicative tool and repository for personal artefacts such as pictures and contacts, it starts to be used for different purposes, illuminating their engagement with changing forms of sociality as the women move away from intensely active involvement in their female friendship groups towards their multifaceted role in the network of extended kin relations. The women's new role in the household also requires a substantial amount of time spent on housework and caring activities. For these young women, domestic and familial responsibilities come to the fore leaving less time for socialising with friends. Although we did not have any young husbands in the sample to illustrate their perspectives, the young women intimated that their partners' phone use had not changed to the same extent.

Our study of mobile phones also lays open the processes by which the young women become wives and mothers and the changes from strong peer group relations to a 'coupled' identity intersected by motherhood, an enduring area of interest for sociologists. This glimpse of motherhood by mobile demonstrates that at this moment in their lives, marital, parental and family relations were prioritised before friendship time; however, this may be explained by cultural differences in the value placed on friendship and family relations (Spencer and Pahl, 2006) and the difficulties that many women continue to face in doing leisure outside the home without husbands (Green et al., 1990). The mobile can be viewed as a particularly useful technology for mothers confined to the home in terms of being able to send texts to reaffirm social ties and call people for short exchanges. However, the spaces to talk and to go out with friends become more circumscribed and have to be fitted around (married) domestic routines unlike when they were single. It may be that in spite of the promise of perpetual contact via new information and communication technologies, material and cultural constraints on face-to-face contact can lead to the weakening of the durability of some types of personal ties. Moreover, this raises serious questions about the contemporary emphasis on freedom to choose whom we associate with and when.

Conclusions

This chapter has made the case for a gendering of the digital age, arguing for increased recognition of the gendered dimensions of the digital

in everyday life. Inspired by the insights from the sizeable and invaluable body of work on gender and technology, we suggest that it is now time to move this debate on to the newer ground ploughed by movement into the digital age. Feminist theorists, including sociologists, have moved beyond simplistic binary conceptualisations of technology as oppressive or liberating for women, towards a recognition of digital technology as a mixed blessing. Yet, the much heralded 'promise' of digital technologies in challenging gendered inequalities in everyday life remains to be seen. Furthermore, as feminist sociologists, we have underlined the pressing need to address the new theoretical challenges raised by the digital age, in order to avert the (potential) erasure of a gender lens from core areas of increasingly digitalised everyday life and to address the ways in which digital technologies may be reshaping not simply the everyday life but indeed the conceptualisation of gender itself. Our main focus has been to illuminate the arenas in which gender and technology emerge and co-evolve in new, complex and interesting ways, including where and when these are revealed. A critical task for feminists is to focus on and interpret these complexities and the mechanisms and processes which shape them, as they emerge. As feminists, we are also witness to the tensions between enduring gender inequalities and new possibilities for challenge and change. In our more fluid and flexible times there is a need to ground the novelty and excitement of new arenas for digital research in broader feminist and sociological debates. To revisit the beginning of the chapter, exercise of the feminist sociological imagination is essential both to the interpretation of the digital in critical and creative ways and to the revitalisation of sociological theory.

Finally, we are mindful of the influence of classical sociological theorists such as C. Wright Mills (1970) and Berger and Luckmann (1967) who have famously exhorted us to commit to the intellectual and ethical endeavour of representing everyday life in the most thorough and nuanced ways possible. Similarly, it is our contention that the recent digital turn transforms the politics of technology in such complex ways that feminist sociologists have an ethical and political obligation to reveal the gendered narratives of technology in everyday life. There is much work to be done. It is beyond the scope of this chapter to fully engage with the myriad possibilities and challenges for feminist sociologists in the digital age, but we have attempted to use this space to offer some ideas on both how to re-theorise the digital and pathways for future research. The digital age poses not only theoretical and empirical challenges but also methodological ones including interrogating the meanings of the digital turn for feminist research methods. There are

also major political and social issues in the digital era to be explored, ranging from broader arenas of social inequality and representations of gender in digital media, through to specific areas of research including online gender violence against women, women's participation and representation in digital spaces and the impact of technologies on gendered interpersonal relations and the division of labour. The exercise of our sociological imagination is a vital resource for keeping the gender lens sharp but more importantly focused upon the evolving social relations within which technology is embedded; an exercise that guards against excessive valorisation of digital futures.

Notes

1. Digital technologies include digital cameras, the Internet, the World Wide Web, television, PC's and iPods, for example. Mobile phones are also included here due to their digital components (camera, Internet etc.) and also because they have reshaped social relations in ways of great importance to digital age theorisation.
2. For full and historical discussions of feminist theories of technology, see Wajcman (2004) and Wyatt (2008).
3. See Green and Singleton (2007, 2009) for more detailed discussions of the research.

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3

Afterword: Digital Relationships and Feminist Hope

Debra Ferreday

Any critical rethinking of relationships in the digital age involves, in some sense, a 'speaking back'. Perhaps more than any other area of studies related to digital media and technologies, this is an area that has historically been characterised by unsubstantiated speculation and sweeping claims which seem almost calculated, in hindsight, to cause consternation to feminists and sociologists alike. Indeed, the study of relationality and subjectivity in online contexts is one area where we might want to be critical of the very notion of a 'digital age'. The question for feminist theories of the digital is rather how do we avoid the notion that the digital represents a huge social revolution which demands an equal transformation in sociological thinking, when so much of what we see in digital spaces remains so dispiritingly familiar? And how does one do this without becoming as negative and reductive as that sentence would seem to suggest?

Both the chapters in this part are engaged in this work of speaking back, a project which I would argue is crucial in relation to questions of gender and relationality, for two reasons. Firstly, because the utopian and rather uncritical theorising of the digital has historically tended to be particularly unsatisfactory in its dealing with questions of gender and sexuality. Secondly, in the same period, social theory has generated new ways of thinking about relationships, relationality and self, but these have not always been brought into fruitful dialogue with theories of the digital, despite the latter's preoccupation with the ways in which relationality might be reconfigured through new technologies. The digital turn in social life has coincided with the affective turn in social theory, but it sometimes seems as though they have run on parallel lines without ever meeting. Although feminist scholars of digital culture, in particular, have always been concerned with mapping the affective and

relational politics of digital cultures, it is only recently that a distinct body of work has begun to emerge in this area which brings the digital and the sociological into dialogue (see, for example, Kuntsman and Karatzogianni, 2012).

Both the chapters in this part deal with digital relationalities from a feminist perspective, and as such they are engaged in a labour of speaking back that will be familiar to many feminist scholars of the digital. In the early days of academic engagement with online and mobile technologies, so many grandstanding claims were made for the transformative power of technology that – ironically, given the postmodern stance of much of this theorising – they almost constitute a grand narrative in themselves: of technology as liberation, of the overthrow of established regimes of gender and sexuality, of the chimeric but apparently transforming experience known as 'cybersex'. Perhaps the most important side effect of this theorising, for sociology, is that it generated a robust and critically engaged feminist response which is still producing new debates, new questions. Certainly the question both articles raise – of how to reconcile social theory with an effective and critically engaged feminist critique – is emerging as an important one for sociology in the digital age. For Lynn Jamieson, who recalls here the critical reaction to her germinal text *Intimacy: Personal Relationships in Modern Societies*, published in 1997 which accused her of ignoring questions such as 'the potential decline of skin against skin sex and the extension of the body into new dimensions', the outpouring of celebratory accounts of 'cybersex' and online gender bending in the 1990s worked to silence feminist critique of the ways in which normative gender relations might be reproduced in digital spaces. Here, she records her 'cynicism about [narratives of] liberation and innovation, transcending the body and conventional gendered sexual scripts', since as she rightly notes, 'as well as creating possibilities for safe spaces, levelling power, gender bending and queering, the internet also affords possibilities for recreating hierarchies of sexuality and gender' (this volume). In hindsight, this scepticism seems justified: online life has not, on the whole, developed along the lines dreamed of by postmodernists in the 1990s. The trends that are most interesting to contemporary sociology – including incorporation of mobile technologies into everyday life, the importance of family and friend relationships and the emergence of blogging culture – seem, in their emphasis on the mundane and the quotidian, the very antithesis of the Internet-as-anonymous playground trope. At the same time, the most interesting theoretical responses to digital culture are those which have emerged

out of critiques of such technocentrism, especially those that emerged out of feminist and postcolonial studies.

Early writing on digital gender and sexuality was characterised by vast claims, informed by science fiction as well as by a rather gung-ho reading of the more ludic manifestations of academic postmodern theory together with what I would argue was a misreading of Butler; gender, in popular narratives of cyberculture, was seen very much as a matter of personal agency, a costume to be put on and taken off, despite Butler's own warning against reading her work in this way. These misreading, elisions and outbreaks of wishful thinking led either to the invisibility of gender, as well as the rather optimistic academic trend known as cyberfeminism, which tended to gloss over questions of power and intersectionality. As Green and Singleton note, 'gender is often rendered invisible in the macro-theorising about social and technological change and indeed in many empirical studies of IT use' (this volume). Each of these articles deals in a sense with invisibility; with the strange absences, silences and omissions through which gender becomes a structuring absence within the emerging and contested discipline of cyberculture studies. This is all the more astounding given the intense interest the digital holds for feminist sociologists; indeed each of these articles engages, in part, in the work of disciplining feminist studies of the digital by calling attention to the range of work produced within sociology, gender studies and science and technology studies and across the boundaries of those disciplines. This project often involves observing online social phenomena: here, Green and Singleton make an ardent case for an empirically focused sociology of the digital, arguing that 'we need to view the digital as a significant lens through which sociologists can continue to analyse the localised nature of everyday life, including gendered behaviours and contexts, rather than becoming dazzled by the shiny new vista that the Digital Age appears to open up' (this volume). This is emphatically not to suggest a binary in which theory is abstract and irrelevant, and empirical research somehow more authentic and 'real'. What I am suggesting, following the chapters in this part, is that theory needs to be responsive to lived experience; it is not a tool that one applies in order to reach some predetermined conclusion but must emerge out of dialogue and listening – and this is particularly true in thinking through questions of subjectivity and intimacy.

In different ways then, both these articles suggest not so much that it is necessary to rethink sociology in response to the digital, but rather that it may be necessary and productive to think of sociology and the digital together in potentially radical new ways. A key element in this

thinking is to pay attention to the extent to which 'new' technologies are embedded in everyday personal and social life. Rather than seeing the digital as a separate and privileged field for theoretical speculation, these chapters demonstrate that the digital is integrated into, and continuous with, the everyday. As Lynn Jamieson notes, this is not to deny that it might open up spaces for new forms of engagement and belonging. Aside from the sweeping generalisations of cyber theory, the digital is a rich field for the sociological imagination. The question is how sociology, and particularly in this case feminist sociology, might pay attention to the diversity and complexity of digital cultures. This question is raised by Green and Singleton in their article on the gendering of the digital. They argue that the project of 'combining feminist theory with the sociological imagination' has the power to transform the discipline, producing better and more nuanced analyses of the ways in which we live alongside and through digital technologies that have a potential impact 'from the micro-social arena of personal relationships in everyday life through to "grand theory" '. It is instructive, also, to recall that 'rethinking' might not only involve the production of new theories, new 'turns' but it may also involve remembering; in her chapter on intimacy and the self, Jamieson reminds us that debates about intimacy are not unique to the digital age but rather emerge out of questions of subjectivity and identity that have long preoccupied sociologists. A rethinking might therefore involve the remembering of certain theories of the self (in this case classical interactionist social theory) which – 'with some refurbishment' – remain 'fit for purpose', as well as generating new theoretical lenses through which to look at digital relationalities.

The debates around digital intersubjectivities, seen in this context, are not new: the idea of mediated emergent selves constructed in dialogue with technology, and of technology as a focus of the social, is at least as old as McLuhan's writing on television (1964). Seen in this light, Green and Singleton's argument that 'we need to focus upon the everyday in order to understand the relationship between processes of technological innovation and the ways in which various ICTs are consumed and become domesticated' constructs a continuum between the digital and older technologies of the self. Recently, sociologists have been concerned with bringing the digital into dialogue with social theories of relationality, intimacy and the self, whilst the influence of feminist technoscience studies has led to a more critical and nuanced reading of the ways in which digital cultures are gendered, as well as calling attention to the ways in which they might open up moments

of transformative potential which – being undramatic, contingent and local rather than sweepingly transformative – may look very different than the overly positive or negative projections of early cyberculture studies would suggest. As Patricia Clough has written, new technological developments have been instructive for social theory since they '[allow] us both to "see" affect and to produce affective bodily capacities beyond the by's organic-physiological constraints' (2007: 3). This is instructive not because it somehow allows the body to be transcended, but in that it allows us see what feminist sociologists have long argued: that the notion of a bounded, unitary self is a culturally mediated fiction, albeit one with structuring power. As Deborah Gamb has noted (in context of writing about technological embodiment), it may be true that 'communication and information technology have the power to undo the distinctions between nature and cultures, organic and nonorganic, machine and human', but our desire to undo these 'easy oppositions' does not mean we do not live them as real (2007: 110). The 'new' selves we construct in relation with technology may be only new to us as individuals, not necessarily 'new' in the sense of politically radical or socially transformative. For example, Green and Singleton record one participant's construction of the identity of 'well-connected businessman' through his relationship with his mobile phone. This finding, which is typical of the men interviewed in their study, resonates with important sociological critiques of the extent to which digital technologies are instrumental in the production of neoliberal selves as well as with recent work on masculinities.

Recently, scholars have argued that forms of intimacy and affective engagement are central to the knowledge economy. This is explored, for example, in Melissa Gregg's work on the intimacy of digital labour. In her work on social media, labour and class, Gregg traces how the shift to an information economy demands a new, intimate relationship with work: work intrudes into and disrupts offline life, monopolising time and space such that social mobility and class identity become intimately bound up with the ability to produce a coherent, masculinised digital self (2007). The excitement around new forms of social networking and online involvement often serves to mask the commercial and professional allegiances of such sites, as well as obscuring the ways in which they reproduce inequalities of class, capital and access, as well as of gender and sexuality. On the other hand, digital technologies also demand new forms of engagement from scholars. It is not enough simply to read digital technologies for evidence of hegemonic masculinity, neoliberalism, or whatever: these are not simply media texts

to which we can apply theoretical tools, they are records of (and in themselves constitute) lived experience. As Les Back has noted, one of the most interesting aspects of new technologies for sociology may well be that they generate new ways of listening, that they require that we 'start to think differently about the relationship between the observer and the observed' (2007: 11). Blogs, social networking and other ICTs speak to Back's argument that research participants' records of their own lives are not 'some authentic raw voice': instead they constitute a 'partial expertise' that demands to be taken seriously (ibid). It is this reframing of the digital as archive that, I think, has the greatest potential for sociological thinking on selves and relationships. As the feminist anthropologist Adi Kuntsman has argued, digital spaces such as blogs represent archives of feeling; 'speed and circulation in today's digital cultures co-exist with extensive documentation and preservation; turning digitalised feelings, interactions and events into . . . "virtual fossils" – frozen in on-line archives that remain on servers for years' (2010). These archives of feelings and relationships represent a huge potential for sociology, not to generate or reproduce some totalising discourse which explains everything, but rather to pay attention to the specificities and contingencies of online and offline life.

This brings me back to the chapters in this part and particularly to Green and Singleton's summary of the technofeminist position exemplified by the work of Judy Wajcman, which they suggest represents a way forward for feminist engagement with digital technology in seeming to 'steer an even course through the polarised positions of technophilia and technophobia to reach a more nuanced analysis of gender and technology which states that the gender–technology relations are mutable and flexible' (Wajcman 2004). Wajcman's work is hopeful in that she offers a robust critique of technological determinism and gender essentialism, whilst still holding open the possibility for a nuanced and critically reflexive attentiveness to the ways in which digital technologies are invested with hope as well as inscribed with inequality and exclusion. In calling for a revitalised feminist politics that refuses the technocentric notion that technologies themselves make new forms of subjectivity and activism possible, Wacjman's work reminds us that 'it is feminist politics, not technology, that is essential to the realisation of gender equality' (Green and Singleton, this volume). If, as they argue, 'exercise of the sociological imagination is essential to the interpretation of the digital in critical and creative ways' (ibid), such a hopeful feminist politics is a necessary part of that project.

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Part II
Spaces

4

Rethinking Space: Urban Informatics and the Sociological Imagination

Roger Burrows and David Beer

What is urban informatics?

The analysis of *urban informatics* might initially sound like a rather technical and esoteric undertaking; something best restricted to a few specialised books, journals and conferences, rather than a topic that could potentially be of a more general sociological interest. The task in this chapter is to convince the, likely, sceptical reader otherwise that an analytic focus on urban informatics provides a plethora of insights into how the contemporary sociological imagination might be more productively rethought for the digital age. The notion of urban informatics is a relatively recent invention designed to conceptually register that we now live under circumstances where the well-worn ontological distinction between 'a space of *places*' and 'a space of *flows*' (Castells, 1996) is no longer sustainable. It is the study of how information and urban systems are meshing in order to produce, what for some is, a distinctive social ontology that demands a major rethinking of sociological practice.

Whilst most readers will be familiar with the notion of the *urban* – urban sociology has a long and well-rehearsed history in the discipline (Parker, 2004) – the notion of *informatics* may well be less familiar. Here we follow the cultural analyst Katherine Hayles (1999: 313) by adopting a very broad sensitising definition. Hayles states:

> By 'informatics,' I mean the material, technological, economic, and social structures that make the information age possible . . . [T]he hardware and software that have merged telecommunications with

> computer technology; the patterns of living that emerge from and depend upon access to large data banks and instantaneous transmission of messages; and changing habits of posture, eye focus, hand motions, and neural connections that are reconfiguring the human body in conjunction with information technologies.

One could point towards any number of sources that have attempted to codify this field over the last few years, but emblematic volumes certainly include: the ground-clearing work of Graham (2004) on *Cybercities*; the collection of studies gathered together in Ellison et al. (2007); and, most recently, the colossal *Handbook of Research on Urban Informatics* (Foth, 2009). The recent 'non-science fiction' novels of William Gibson such as *Pattern Recognition* (2003) and, especially, *Spook Country* (2007) also provide much analytic insight into the new social ontology that developments in urban informatics are claimed to portend. The theoretical resources the field draws upon are diverse – deriving from cultural studies, design theory, human geography as well as sociology, but major contributions, some of which we will examine below, include the recent writings of Mike Crang, Martin Dodge, Stephen Graham, Rob Kitchin, Scott Lash, Bill Mitchell, Bruce Sterling and Nigel Thrift, as well as Katherine Hayles. Reflecting on this list of names, it is possible to suggest from the outset that what is needed in *rethinking sociology* and *rethinking space* in a digital age is a routine engagement with literatures and debates that are located outside of the confines of the academic discipline of sociology. These external resources are where we feel sociology might locate conceptual and empirical insights and strategies that might feed into any necessary regeneration of the discipline in light of the changing context.

What is at stake sociologically?

Perhaps the best way of explaining what is at stake sociologically if one accepts the basic premise of contemporary urban informatics work is to track through the conceptual development of one of these writers – the cultural sociologist Scott Lash – as it pertains to the analysis of social geography in a digital age. The manner in which Lash rethinks his position is not only indicative of broader patterns of re-theorising invoked by the onslaught of digitisation processes but it is also a highly pertinent example of the necessity to 'speed-up' acts of sociological theorising in order to keep pace with patterns of socio-technical change and associated cultural practices (Gane, 2006).

As recently as 2002 Lash was quite content in maintaining the distinction between a 'space of places' and a 'space of flows'. In this distinction, he recognised that traditional sociological concerns with proximate social relationships taking place within specific localities needed to take account of, what were at the time, new possibilities afforded by the widespread introduction of networked digitised devices of various kinds. These new devices opened up the space of places to a new type of space; one that enabled real-time social interaction on a global scale without physical proximity, enabled by software, code and digital informational flows. Indeed, for Lash, this distinction between the space of places and the space of flows and the differential manner in which they were beginning to interact were conceptualised as providing the basis of a newly emergent global social geography. For Lash, social geography appeared to be becoming fragmented as a result of the interplay between two main drivers: the variable density of the 'information flows' populating the space of flows and the prior nature of the 'identity spaces' that such flows enveloped, in the space of places. Lash (2002: 28–29) drew a distinction between what he called 'live' and 'dead' zones in the fluid 'infoscapes' that he saw as emerging across the globe. Live zones were where such flows were at their most dense, and dead zones were where the flows were 'lightest'. However, for Lash, this 'infoscape' intersected in variable ways with zones of another sort – what he termed the 'tame' and 'wild' zones of the space of places. He writes, 'the live and dead zones of economic spaces refer to the presence (or relative absence) of the flows, and the identity spaces refer to what social actors do with them' (Lash 2002: 28–29). These two sets of distinctions (live/dead and tame/wild) allowed Lash to identify four different types of socio-spatial zone; 'amalgams' of the variable intersectional mediations of the space of places with the space of flows: live/tame zones; live/wild zones; dead/tame zones; and dead/wild zones (Ellison and Burrows, 2007).

In his more recent theorising, however, Lash (2006, 2007a, 2007b, 2007c) has come to recognise that this distinction is not sustainable. Rather, he recognises instead that the 'stuff' that makes up the social fabric has changed – it is no longer just about the emergent properties that result from the complex mediation of 'places' though 'flows'; rather social associations and interactions are now not only mediated by software and code but they are also becoming increasingly *constituted* by it. In Lash's terminology, '[w]hat was a medium . . . has become a thing, a product' (Lash, 2007a: 18). Information is no longer just epistemological, it is becoming increasingly ontological. Information is now not only a means by which we come to understand the world; but it is also

an active agent in constructing it (Lash, 2006: 581). He suggests that we might even now usefully think in terms of the emergence of a new 'new media' ontology (Lash, 2007b), in which many of the essential underpinnings of social life – the operation of power in particular – are becoming ever more 'algorithmic' (Beer, 2009).

Lash is not alone in coming to this conclusion. Although the argot may differ, this is also the position articulated by Thrift and French (2002: 309), in an influential paper, where they argue that the 'technical substrate of . . . societies . . . has changed decisively as software has come to intervene in all aspects of everyday life' creating a 'new and complex form of automated spatiality . . . which has important consequences for what we regard as the world's phenomenality'. Dodge and Kitchin (2004: 209) express the issue in even more epochialist language: 'Code is the lifeblood of the network society, just as steam was at the start of the industrial age. Code, like steam, has the power to shape the material world; it is able to produce space'. Now, if code does indeed form what Thrift (2004a: 177) urges us to think of as a 'technological unconscious' – or what he elsewhere calls 'the surface on which life floats' (Thrift, 2004b: 584) – then we need to ask by what form of analysis can this 'unconscious', and its social consequences and affects, be best interrogated? The sociological implications of taking this new 'new media' ontology seriously has, hitherto, been nowhere better explored than in the study of urban informatics. In what follows, we summarise some of this work in order to introduce a basic conceptual nomenclature which may well have a broader sociological applicability.

Towards a nomenclature

Of course, cities have never been just delimited containers of social life; they have always been related in multifaceted ways with social action at various spatial scales – the home, the street, the neighbourhood, the district, the region, the nation and, increasingly, the globe. We need look no further than the classic urban writings of Walter Benjamin or Georg Simmel to reach such conclusions. In recent years, however, the complex socio-spatial vectors that constitute and produce everyday urban life have come, increasingly, to function through the operation of digital code. It should, then, be no surprise that the study of urban informatics has been at the vanguard of developing concepts able to better deal with the new realities of the 'phenomenality' we now confront. But let us not be too ambitious here. One of the great weaknesses of sociology as a discipline in recent years has been the tendency for it to pursue a headlong

rush into analytics often well ahead of anything approaching a decent *description* of what it is that needs explaining (for more on this, see Neil Selwyn's contribution to this volume or Beer and Burrows, 2007). The sociological study of matters digital have been especially prone to forms of conceptual 'cyberbole' and an unproductive faddishness (Woolgar, 2002) that have not got us very far in coming to terms with the distinctive characteristics of the so-called 'digital age'. The seductiveness of the technologies and their attached possibilities and potentials have often become quite powerful actors in shaping understandings of their appropriations into everyday routines. With respect to any sociological analysis of digitisation processes, we would do well to recall Goffman's (1983: 17) much repeated corrective to some of our grander aspirations:

> From the perspective of the physical and biological sciences, human social life is only a small irregular scab on the face of nature, not particularly amenable to deep systematic analysis . . . Indeed I have heard it said that we should be glad to trade what we've so far produced for a few really good conceptual distinctions and a cold beer.

Urban informatics is a field of inquiry that has, so far, been quite adept at producing 'a few really good conceptual distinctions' from which a broader sociological audience may benefit. So far we have introduced quite general attempts to describe a new social ontology – one in which digital code plays an increasingly productive, constitutive role. But this description is too abstract to be of much practical sociological use. What recent work in urban informatics offers is a more detailed and nuanced exploration of this new ontology; a nomenclature for better describing the variable texture of a social world at which we are at the cusp.

We turn now to look in more detail at some key prominent concepts that constitute the analytical frameworks of urban informatics, along with some useful examples that illustrate how these concepts and ideas relate to concrete phenomena. The problem here, as has been an implicit in the chapter so far, is that there are variegated voices discussing similar issues in urban informatics in different ways and with a different vocabulary. We attempt here to illustrate how this conceptual tool-kit might fit together in order to provide a heuristic upon which those interested in developing a sociology of urban informatics might draw. To organise such a resource, we can think of two levels upon which the analysis of urban informatics might operate. We begin below with a discussion of *objects* before looking at the *assemblages* that they might constitute. To foreground these discussions, we have summarised

this urban informatics conceptual framework below in tabulated form (Table 4.1):

Table 4.1 A simplified summary of a conceptual framework for urban informatics (using only some of the key conceptual terms)

Objects	Assemblages	Key features
Unitary coded objects	Augmented space	Basic digital infrastructures. Closed and disconnected.
		Highly visible presence with clear implications and consequences.
		Distinguishable human and machine agency.
Impermeable and permeable logjects	Enacted space	Advanced digital infrastructures.
		Trackability and traceability.
		Connected but decentralised.
		Unclear, complex and concealed presences and affects.
		Increasing technological agency and algorithmic power.
Spimes	Transducted space	Highly advanced (and often futuristic) digital infrastructures.
		Fluid and open connectivity.
		Ambient and highly advanced thinking technologies bypassing human agency.
		Unpredictable, complex and meshed causalities, with no possibility for tracking emergence.
		Advanced algorithmic power shaping and constituting lifeworlds and lifecourses.

Objects

Unitary coded objects and logjects

These different forms of digital spatialisation are summoned by an ever-increasing number of 'ordinary' devices that populate our social worlds. Dodge and Kitchin (2008), in part of a series of conceptualisations across a series of important articles (see Dodge and Kitchin, 2004, 2005, 2008), offer a useful categorisation. They differentiate between what they term, on the one hand, *unitary coded objects* (UCOs) and what, on the other, they call *logjects*. According to Dodge and Kitchin:

> Coded objects can be subdivided into two broad classes based on their relational capacities. First, there are unitary objects that rely on code to function but do not record their work in the world. Second, there are objects that have an 'awareness' of themselves and their relations with the world and which, by default, automatically record aspects of those relations in logs that are stored and re-used in the future.
>
> (Dodge and Kitchin, 2008: 6)

It is this second category of objects, defined by the ability to record aspects of their usage and relations, that they refer to as 'logjects'. Further defining the concept of logjects, Dodge and Kitchin say this:

> [logjects] not only sense the world but also record their status and usage, and, importantly can retain these logs even when deactivated and utilise them when reactivated. In key ways these logs can have a bearing on the on-going operation of the object and its relations with people or wider processes . . . . We broadly define a logject as an object that monitors and records in some fashion its own use.
>
> (Dodge and Kitchin, 2008: 7)

We see here then a useful differentiation emerging that is useful in categorising and understanding contemporary objects. UCOs are material objects that rely on code to function but do not keep any record of their actions. Logjects, in contrast, are material objects that also rely on code to function but, in addition, possess the ability to make a record – or a log – of their actions. UCOs are of two types: those that function independently of their environment and those that gather data from their environment and use this in order to function. Examples of the former might include increasingly mundane objects such as digital watches, DVD players or universal serial bus (USB) sticks. The latter group might include (more recent) objects such as digital heating control systems, advanced software saturated washing machines or digital cameras with automatic settings.

Of the two, logjects are the more interesting devices and are likely to become ever more important elements of life in the digital age. The notion is inspired by Bleecker's (2006) more restricted conceptualisation of *blogjects*, but for Dodge and Kitchin (2008: 6) a blogject is just one type of a more general category of logject. More formally, Dodge and Kitchin (2008: 6–7) categorise such entities as not only possessing an 'awareness' of their environment but also as being able to respond to changes in that environment that are 'meaningful'. They produce 'traces' and 'tracks' of

their own functioning across time and/or space. They record that history and can communicate it across a digital network for analysis and use by other agents (other coded objects and/or humans). They can use the data produced in order to undertake automated, automatic and autonomous decisions and actions in the world without human oversight and can thus effect change. Finally, they are programmable and thus mutable through the adjustment of settings and software updates.

Impermeable and permeable logjects

Such logjects are of two different types: *impermeable* and *permeable*. Dodge and Kitchin define 'impermeable logjects' as:

> relatively self-contained units . . . Such devices trace and track their usage by default, recording this data as an embedded history . . . all essential capacities are held locally and primary functionality does not require a network connection to operate . . . these devices can be connected to wider networks and information can be uploaded and exchanged . . . though typically this is not automatic.
>
> (Dodge and Kitchin, 2008: 8)

The impermeable logject creates a log of use but does not form a constant connection with networks, the information it holds can only be obtained when it is connected into such networks. It therefore holds this information unless the user makes the effort to connect the device with a wider network that *might* then extract the information it holds. It is worth noting that amongst other examples the authors suggest the MP3 player as an example of an impermeable logject. As an indicator of the logs captured by such devices, we can think of the number of listens each song has received on that particular device which is shown when an iPod is docked into iTunes. When docked into a networked computer the mobile music device may communicate this and other information about its use to external bodies.

The second type of logject identified by Dodge and Kitchin is the 'permeable logject'. Like the impermeable logject, the permeable logject retains information about the use and history of the object, but these objects differ in that rather than being self-contained units that may intermittently connect into a network they are instead networked and thus are able to communicate this recorded information when required. Dodge and Kitchin describe this in the following terms:

> Permeable logjects do not function without continuous access to other technologies and networks. In particular, because they need the

> constant two-way flow of data exchanges, they are reliant on access to a distributed communication network to perform their primary function. Such logjects track, trace and record their usage locally but . . . their full histories are also recorded externally to its immediate material form.
>
> (Dodge and Kitchin, 2008: 9)

Examples provided of these devices include satellite television boxes, home security monitoring systems and mobile telephones. These devices are constantly communicating information or are open for information to be harvested when required. We can clearly place the now-networked versions of mobile music devices such as the iPod Touch and iPhone (amongst others) in this second category of logjects; these devices are now wireless enabled and can therefore operate as networked devices which log and communicate information about their usage. This we can imagine as being a part of the wider interest in and increasing value of transactional data about us – the presence of which we have seen to be associated with a possible coming crisis in sociology (see Savage and Burrows, 2007). The result is that the ability of these logjects to store and communicate information about their use means that things like the music or radio we listen to, the locations we move through, the photos we take are now becoming increasingly trackable and traceable as permeable and impermeable logjects are activated in everyday practices. An interesting example here is the tagging of photos taken on Apple's new iPhones with global positioning information so that the 'exact' location of that photo is recorded. This information is then logged by the device and depending on the choices of the owner may be communicated to Apple.

With permeable logject devices such as the iPod Touch and the iPhone now on the market with more devices emerging and the likelihood that they will soon become commonplace, the trend for convergence suggests that in the not too distant future most mobile music devices will have some level of permeability built in. It is with the development and coming ubiquity of such permeable logjects throughout social and urban systems that we can begin to glimpse the possibility of the ontological arrival of a new object likely to be the central concern of (near) future social scientific analyses of urban informatics – *the spime*.

Spimes

Spimes (a neologism of space and time) are the thought 'invention' of former cyberpunk author, Bruce Sterling (2005). Sterling is interested

in what is likely to result as permeable logjects become ubiquitous. He sees them as the central feature of a newly emergent technoculture. Sterling identifies a number of prior technocultures: a pre-1500 culture of 'Artefacts'; a post-1500s technoculture of 'Machines'; a post 1800s technoculture of 'Products' and a 'Gizmo' technoculture which began around 1989 and which we still inhabit. Although still mass produced, a Gizmo device in the hands of its user will not necessarily be the same item that left the factory. They are increasingly user-alterable, upgradeable and unstable and require extensive informational support systems to function (hence the ubiquity of requests to 'install updates'). Sterling's vision for the next technoculture is the spime: a theoretical image of future production, consumption and cultural practices. Sterling foresees a future based around 'trackable' objects. Every object produced will be assigned a unique identity. Radio frequency identification devices (RFID or 'arphids' as they are known in the literature) may be seen viewed as a prefigurative of this (Gane et al., 2007). As Bill Mitchell has noted:

> RFID tags, sensors, distributed intelligence, and wireless networking technologies are combining to create the possibility of buildings that continually draw inferences about their inhabitants and respond accordingly. In Cambridge, Massachusetts . . . architect Kent Larson is currently constructing PlaceLab – an apartment that thinks – to critically explore the implications of this. PlaceLab is loaded with tags and sensors, and harvests an enormous flood of information, which is then mined for inferences about the current condition and needs of its inhabitants.
>
> (Mitchell, 2005: 63)

As with the logject, as the spime moves through space and time it generates a log of activity – when and where it was made, where it was sent to, who has owned it, when it is used, whether it is functioning correctly, whether it needs repair and a whole myriad of other information. In so doing, it also records data about the things it comes into contact with, hence the ability of the PlaceLab apartment that thinks in response to human movement and habitual practice. But the spime is intended to go beyond the RFID tag. These tags, for Sterling are only early developmental forms of spime. The problem for Sterling is not what these devices can now do, but what their potentials are for future development. Indeed, the purpose of the concept of spime is to begin to understand where these developments may take us, and, if we so

wish, to sensitise us to the need to take the opportunity to develop a sustainable design agenda to inform such developments.

To this end, Sterling suggests that spimes will still be manufactured objects, but objects whose informational support is so overwhelmingly extensive and rich that they are best regarded as material instantiations of an immaterial system. Spimes begin and end as data. They are designed on screens, fabricated by digital means and precisely tracked through space and time throughout their 'earthly sojourn' (Sterling, 2005: 11). Such entities will, of course, be 'eminently data-minable' (Sterling, 2005: 11) to the extent that their value will more often than not be in the extractable information they contain rather than in the object itself. In Sterling-speak: 'in an age of spimes, the object is no longer an object, but an instantiation' (Sterling, 2005: 79). It is not difficult to see how an analytic focus on such devices opens up huge sociological debates about future cultures of *inter alia*: surveillance; privacy; visibility; anticipation; risk; mobility and even, perhaps, the category of the post-human (Beer, 2007; Gane et al., 2007). What we see here, in Sterling's work and the associated writings, is the attempt to grapple with something emergent in urban informatics, the eminent trackability and traceability of objects. The suggestion is that with material devices like the RFID tag we are at the beginning of something. Part of the problem of rethinking sociology is in considering the possible magnitude of such changes and how, if they materialise, they might reconfigure the social as our object of study. But what we begin to see here, particularly through Bill Mitchell's useful, if now a little out-dated, example of the now well-known apartment that thinks, is that these devices do not operate alone, they are in fact networked by design and for this reason need to be thought about in terms of the assemblages of which they are a part. As Hayles puts it, RFID are providing the 'legs' that inform the relational database 'brains' (Hayles in Gane et al., 2007: 349).

Assemblages

It is perhaps no surprise then that for the geographers Crang and Graham (2007) the study of urban informatics will be concerned with the manner in which these devices are formed into complex assemblages used to coordinate, control, empower and disrupt human action across time and space. Clearly it is not possible to explore all of this complexity here, but usefully Crang and Graham identify three broad processes of digital spatialisation, what they term: *augmented* space; *enacted* space and *transducted* space.

Augmented space

Augmented space is, in some ways, the most visible but the least interesting sociologically. It is based on the recognition that the built environment has long been saturated with information from signage and adverts but that much of this information is changing from analogue to digital forms. Augmented spaces then are simply physical objects overlain with virtual objects. As Crang and Graham view it, this notion of augmentation simply reflects the observation that new digital media are being *added* to the experiences of urban life without a qualitative alteration in the emergent properties of urban systems. This then is simply digital information superimposed on physical form. We might think of some quite mundane examples here so as to flesh out this notion of urban spaces augmented by digital devices. We could return to the digital watch mentioned earlier to think of the temporality of the city being set by the digital watch, although not really being changed by its presence in any material sense from the 'analogue' watch. We might think of the televisual billboard whose content changes and moves, and perhaps even the digital control of traffic lights, although this is likely to have a material effect on the flows of traffic through the city which is quite different to any pre-digital traffic light controls. The possibility of a more responsive type of traffic light takes us towards our second category of assemblage.

Enacted space

Enacted space is rather different. This refers to environments in which coded *devices* of various sorts do not just possess additive effects but come to inhabit 'the most ordinary of things' (Crang and Graham, 2007: 793) – the UCOs and logjects already discussed – and are able to produce more than just enhancements to spaces; rather they relocate human agency. This then is the vision of social ontology articulated by Bill Mitchell (2003) in his popular articulation of the spatially extended cyborg, Me++ – the cyborg self in the ubiquitously networked city. In this context we can imagine mobile phones and mobile phone infrastructures operating in city spaces, we could also add mobile music devices, laptops, netbooks and perhaps locational devices like SatNav, and so on. Individuals here become part of a network of people within these spaces who may be connected by such devices. With these devices, the human body is no longer an isolated entity but may connect with other bodies and information sources through these coded informational networks. It is with developments of assemblages that afford

enacted space that we see the emergence of issues that are of profound significance to sociology. With enacted space, we see reconfigurations to social connections and interactions, we see information being retrieved in different social settings, we find spaces of consumption altered, new forms of urban engagement and so on.

With this second more complex form of assemblage developments occur that transform urban living and urban experience and that intervene in connections between people. It is here that urban informatics is required to rethink how we understand these spaces as they become enacted by various devices. However, to return to Crang and Graham, it would be unwise to stop our analytical trajectory here. This is because there is an even more complex relationship between information and the city that is currently emerging which looks likely to have even more significant implications for our collective rethinking of sociology, not least because as these devices sink into our everyday infrastructures so they are becoming increasingly difficult to observe or even to notice.

Transducted space

Transducted space is different again and is concerned not just with the relocation or spatial extension of human agency but also with the potentialities of technological agency *per se* (Dodge and Kitchin, 2005); with power through the algorithm (Beer, 2009). It is within such transducted spaces that the new social ontology of the digital age is at its most developed. This is about the productive power of technology to make things happen via reiterative, transformative or recursive practices (Parker et al., 2007). This is not a form of technological determinism; the characterisation that Hayles offers, which we used at the opening of this chapter, makes this clear. For here we now confront a vast set of automated digital communications that are a part of how we live but not a part of our everyday conscious existence. We are faced with 'active and interactive technologies with cognitive potential' (Gane et al., 2007: 351), operating without the need for human agency. Indeed, Hayles' (2006) notion of a 'cognisphere' suggests that human agency is a part of a much broader assemblage of interconnected agencies.

Hayles' claim is that in 'highly developed and networked societies . . . human awareness comprises the tip of a huge pyramid of data flows, most of which occur between machines' (Hayles, 2006: 161). This then is a context in which '[m]ost of the communication will be automated between intelligent devices. Humans will intervene only in a tiny fraction of that flow of communication. Most of it will go on unsensed and really unknown by humans' (Hayles in Gane et al., 2007:

350). What Hayles describes here is what Thrift (2004a) refers to as the 'technological unconscious' (see Beer, 2007, 2009); the operation of powerful and unknowable digital code that comes to 'produce' everyday life. The result of this for Hayles is the radical transformation of urban spaces as the mobility and connectivity of technologies 'pose unprecedented challenges and opportunities to humans . . . moving within an intelligent and context-aware environment' (Gane et al., 2007: 349) and what might be thought of as 'thoughtful territories' (Beer, 2007). Given that we are dealing with things that are generally concealed from us, it is difficult to point to particular illustrative examples, but what we can consider is how predictive technologies which make recommendations to us or predict things like the music we might like, or the books we might be interested in, and so on, are part of complex assemblage of algorithms, databases and classificatory systems (including geo-demographic classification systems). If we wish to rethink sociology in this context the question is how we might engage with the hidden 'technological unconscious' and how we might begin to consider thinking about causality where so much social interaction is unknown and incomprehensibly complex. Perhaps sociologists should now take the technological unconscious as an analytical target in this changing context. It would certainly provide some possibilities for considering the changing nature of the social.

A sociological agenda . . . ?

Clearly these discussions illustrate how developments in urban informatics pose challenges for sociology in general; the transformations and emergent developments described by work in urban informatics suggest an especial urgency in rethinking the discipline's traditional perspectives and accounts of space. Not least we see some suggestion in the literature we have outlined that human agency is one area that will need to be considered as algorithms and mined data come to be involved in shaping places, organisations and opportunities. In addition to this, what this literature is suggesting is that the changes in the urban fabric, the very infrastructures of the city, now need to be reconsidered by sociologists. We can no longer simply look at the city as a concrete collection of buildings organised in particular ways, out of particular materials and affording particular forms of social interactions. The sociological work that accounts for this is not now redundant, on the contrary it is still a vital source of inspiration, particularly as a document for understanding social change. What this literature does

suggest, however, is that sociologists need to find ways of getting to grips with the informational infrastructures and how these mesh into those established concrete structures and geographical social patternings.

It is within this context of 'algorithmically produced' social life that the need to understand the construction of code and its operation from a sociological perspective becomes fundamental, as does the understanding of the social affects of this code. If we are to take at all seriously the claim that we have entered an era in which the 'automatic production of space' (Thrift and French, 2002) is upon us – and in our view we should – then the implications need our urgent attention. The manner in which digital assemblages are generative of 'software sorted geographies' (Graham, 2004) requires a sociological engagement with the detailed processes involved in the construction and functioning of code. This is not just a task that should engage methodological fetishists and those with an interest in social informatics; it should be central to the agenda of all urbanists, perhaps even sociologists more generally – we find it hard to imagine a productive form of sociology that omits the dimension of space. If we are to survive the coming crisis of empirical sociology (Savage and Burrows, 2007, 2009) we must recognise that the social ontology we now confront is changing and that many of our traditional sociological 'inscription devices' (Osborne et al., 2008) no longer give us the analytic purchase they once did. Confronted with these circumstances, sociologists need to rethink their methodological practices in radically innovative ways unfettered by some of the deeply rooted domain assumptions in our discipline that were so central to our methodological success in the 1960s and 1970s, but which no longer pertain in the early years of the twenty-first century. One possibility might be to generate new 'inscription devices' that take advantage of these developments by capturing some of the information that is stored and communicated by these objects and assemblages.

What we are arguing here is not simply that sociologists need to open up the scope of their analytical interests to include the informatisation of space. This is of course one side of our argument in which we are suggesting that the transformation of urban space requires us to reconsider the founding theoretical and empirical frameworks of the long-established sociology of cities. In addition to this, though, what we are also describing in this chapter is a changing context for *doing* sociology. Urban informatics then is not just a topic around which to exercise our collective sociological imagination, it also describes a context in which we have to operate as sociologists. Rethinking sociology, whether we are interested in urban spaces or not, requires us to consider

these changing contexts and our positions and practices within them in much greater detail than has so far been the case. The types of things covered in the work on urban informatics are crucial in understanding our changing settings, our changing universities, our changing working practices, our changing jurisdictions, our changing public and student perceptions, our changing senses of our discipline, changing student skill sets and knowledge bases and so on.

Urban informatics is particularly well placed in affording opportunities for understanding these changes and, therefore, for understanding how we might envision a thriving contemporary sociology. This is a sociology that will need to confront headlong the commercial harvesting of the data we produce, the commercial analytics and predictive analytics of organisations and market research specialists, the construction of new visualisations of freely available data sources by ordinary web users and the presence of complex and unknown algorithmic systems that take the analysis of social emergence away from an assemblage of human agency and organisational structures. These represent, at least in our view, some quite radical reconfigurations of sociology's objects of study and of the context in which sociology is operating. Urban informatics is not the only place to look to try to engage with these reconfigurations but is also a good place to begin. Above all, as we hope we have illustrated here, it might give us some grounding for a conceptual nomenclature that at least helps us to avoid overlooking the aspects of our objects of study, the more concealed social sorting, that our established theories and methods are, if used alone, likely to miss or even obscure. This conceptual framework and analytic focus above all else will give us the grounding to think through how we might reshape sociology so that it might be in a stable enough position to encounter the types of problems that might challenge the discipline itself.

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5
Re-Thinking Community in the Digital Age?

Karen Evans

Expressions of community

The study of community has a long and valued history across the disciplines which explore the social world and its meanings, yet dominant definitions of the term have altered with global and local transformations and the term has been used to describe a dizzying variety of social formations (Poplin, 1972). Community is constantly in transition, an extremely adaptive social force by and through which people continue to experience and in some ways shape the world around them. Yet whichever form community has taken, it has always developed as a set of practices which denote connectivity and solidarity with others. It is in community that local, traditional and natural social formations have been given precedence over rational and legalistic forms, reflecting the classical sociologist Tönnies' (1887) famous characterisation of community as the local and non-contractual relations of *Gemeinschaft* existing in opposition to *Gesellschaft* – the larger social frameworks of nation, region and city put in place to order the social world following the ascendancy of the Enlightenment project in the West. In many ways classical sociology envisioned community as an alternative space separated from the bureaucratic and controlling forces of the state and heralding the possibility of a stateless society, a differently ordered world in which relations of trust and mutuality alone regulated social behaviours. While in the modern, industrialised world communities were often troubled and sometimes troublesome, nevertheless they were also recognised as spaces of hope and of sociality, where closely knit networks could provide social support and practical help to the similarly disadvantaged and where creative solutions to wider structural problems could be recognised and encouraged.

In certain periods it is the *loss* of community which has exercised the minds of social scientists but ideas of community have always seemed to resurface, reformed and reconfigured within both traditional and novel spaces. With deindustrialisation and the breakdown of the modernist project many urban and, increasingly, rural neighbourhoods declined and fragmented into places of fear, disorder and high crime. Under these deteriorating environmental conditions, the discourse of community took a cultural turn. Sub-cultural forms of community in which people imagined spaces of belonging lying outside traditional place-based structures were constructed around various identities which transcended immediate face-to-face realities of locally based experience (Delanty, 2003). These communities appeared particularly appropriate to the conditions of late modernity, based as they were around the search for new forms of attachment in an increasingly fractured social world. Famously, Benedict Anderson (1983) outlined the socially constructed and imagined nature of such communities, emphasising the key part they played in maintaining boundaries and exclusivity and in utilising ideas of nationality, belonging and difference.

Interest in the study of community temporarily waned in the 1970s and 1980s as social worlds fractured under the strain of deindustrialisation and economic decline. However, community became a relevant topic again in the 1990s as a tool for understanding the development of new social formations which emerged from this terrible shakeout and which appeared to offer an increasingly globalised and cosmopolitan economic, political and social world. New expressions of community emerged, it was argued, which allowed individuals to find their sense of connection in conditions of risk and insecurity which differed greatly from traditional, place-based existences. With the onset of the digital revolution, writers such as Barry Wellman (1979), Claude Fischer (1982), Howard Rheingold (1994) and Manuel Castells (2001b) argued that people no longer built their meaning in local societies but looked further afield to global connectedness. Castells went so far as to claim that the local had been superseded, writing that a '... major transformation of sociability in complex societies took place with the substitution of networks for spatial communities as major forms of sociability' (2001b: 127). His position held that although 'place-based sociability' and 'territorially defined community ... has not disappeared in the world at large ..... it [now] plays a minor role in structuring social relationships for the majority of the population in developed societies' (2001: 126). In this conception of community residence is only marginally important in the construction of friendships and social groups. We elect

instead to spend more time with people whom we have identified as sharing common interests rather than merely the accident of common spaces. The transformation of Western societies from a predominantly rural to an urban way of life, it was suggested, began this process, but increasing global networks, migrations and widening frontiers of experience strengthened this process. This was especially so in recent decades with the introduction of efficient global communications tools and the Internet, which allowed important interpersonal relationships to be maintained over distance. These communication devices were seen to break down barriers of space and time which had previously hindered communication across the globe. Castells (2001b) even argued that the Internet was the most appropriate medium of communication in an emerging network society and that it would play an increasingly important role, not only in the way that people chose to communicate with each other but also in the way they formed significant social relationships.

In the first decade of the twenty-first century, however, the discussion of community in the digital age went somewhat quiet. This lack of critical engagement with the topic was in sharp contrast to the often frenzied speculation which had characterised much discussion and debate in the previous decade. The early to mid-1990s in particular had seen a burgeoning interest in the study of digital communities, Internet-based community networks and the many possibilities which online communication seemed to hold out for the development of truly global and transcultural relationships, unbounded by the restrictions imposed by time and space. There are now more sites than ever within which to connect, alongside newly created web-based social formations which can be used to make new or maintain old friendships. Advances in the technology and the development of file-sharing and communication platforms such as Web 2.0 and RSS have ensured that many different ways of interacting and sharing within cyberspace have become mainstream. Yet talk of the emergence of new forms of community as a result of these innovations in communications technology has grown somewhat stale.

This chapter looks at the emergence of the idea that the new technologies of the digital age would usher in new community formations. It traces the development of these ideas built, for the most part on a utopian dreaming that solutions to the problems faced by communities in the late twentieth century might be found in the new spaces created in emerging virtual worlds. This speculation, it will be argued, emerged from an idealism which could not counter the

power of consumer-driven capitalism to distort and mould new formations to its own particular goals. Through consideration of various online social spaces, the chapter will argue that rather than hosting new forms of community, long-standing social formations have instead been closely replicated in cyberspace. This suggests that claims around the transformative capacities of cyberspace have been largely unsubstantiated.

Building technological utopias

Back in the 1990s the widespread adoption of ICTs at work, and then in the home, appeared to herald widespread, if not revolutionary, social change. The ability to maintain contact with others irrespective of their geographical location, with the flexibility of asynchronous contact and without huge cost implications to the sender or receiver suggested the development of hitherto unimagined and widely accessible forums for the exchange of ideas and experiences. The academic and policy discussions which followed these technological developments were overwhelmingly positive in nature (Negroponte, 1995; Department of Trade and Industry, 1996; Doheny-Farina, 1996; Fisher et al., 1996; Jones 1997). While a few commentators recognised that dangers lurked within the spaces of technology (Spender, 1995; Carter 1997) the general thrust of the conversation suggested that the digital age could be a place of hope and renewal. The inherent sociability promised by the developing information and communication technologies seemed to offer a ready-made antidote to the excessive individualism which had characterised social relations in the preceding decades of neo-liberal ascendancy (Wellman, 1999). The possibilities for the development of positive communicative action seemed endless. Cyberspace offered a new space for differently constituted communities to flourish. It was imagined as a virgin territory which could be shaped and developed according to a different set of values than those which predominated in the physical spaces of our world. If traditional communities were about sharing social spaces replete with inequalities, then these could be superseded by open, democratic, placeless cyberspaces in which inequalities of wealth, class, gender and ethnicity had no purchase. From this perspective, cyberspace could develop as a worldwide repository of alternative propositions and ideas which had been marginalised or refused space altogether in the physically bounded realms where nations, governments and legal statutes had carved out their own, self-serving, boundaries.

Underlying these idealisations was the view that in many of the nations in which the Internet was gaining a solid foothold, the dominant economic mode had become that of 'informational capitalism' – a particular stage and form of capital within which the production of knowledge and ideas had replaced that of goods and the direct delivery of services as the basis for wealth formation (Logan and Molotch, 1987; Giddens, 1990). This transformation of the economic base was seen as the motor driving fundamental changes in the social superstructure, destroying established ways of life and communities which had grown up around extant industrial formations but throwing up new social formations in their wake. Earlier fears that disappearing agricultural communities and the close networks and support structures which they had generated were irreplaceable had been contradicted in advanced industrial society. The latter had eventually fostered new forms of collective consciousness resulting in a progressive and public outlook in which government was expected to adopt an orientation towards the care and welfare of its national citizens. Informational capitalism, however, was linked to the fall of public man (Sennett, 1977) and the emergence of personal networks and individually situated knowledge. It ushered in an era of individual responsibility wherein allegiance was directed towards the self and immediate family. The retrenchment or complete withdrawal of public provision was considered inevitable. Cyberspace, the 'new' information society and virtual worlds were imagined as the new public spaces where public and civic-mindedness would prove to be dominant social realities (Miller, 1995).

Those who advocated the building of communities through computer-based technologies were often profoundly pessimistic about the prospects of generating or rediscovering community in the physical realm. Community, it was posited, could no longer be fostered in the close physical spaces in which it had first emerged and subsequently endured (Wellman, 1979). Too many neighbourhoods had been shattered by fear – of crime, of unemployment, of what the future might hold and rendered too cynical through lack of trust – of neighbours, local political representatives and national governments – to organise collectively again in the short term. An alternative solution was offered – building new communities, bit by bit, using the seemingly impersonal medium of computer-mediated communication. This could enable 'truly personal' interaction, fully chosen and unfettered by the narrow-minded parochialism engendered by attachments to geographical location or the limits imposed by physical embodiment. The 'pure'

and essential communities thus created would enable truly significant relationships to develop, a meeting of minds whereby shared values would predominate and shared interests be pursued in a space that was both secure and safe. These communities were to be truly 'imagined' (Anderson, 1983), having no allegiances to existing nations, regions or localities and offering new vistas and the development of hitherto unknown global connections. Such networks, it was suggested, would prove more enduring and more popular than the disorderly and contradictory physical spaces in which community had been forged in the twentieth century. For the new community builders of the digital age, the old spaces of community were either already dead or were dying. The social consciousness of the future, these writers argued, would have personal networks at its foundation and from these roots would arise communities of belonging – transformed, newly relevant and ready to take on different challenges. In addition, the formerly excluded, such as minorities of all persuasions, could find their connections and points of inclusion within virtual worlds.

Connecting and reconnecting in digital spaces

The diversification of communication media which characterised the 'digital age' opened up the possibility that community would adapt once again to new 'post-traditional' circumstances (Delanty, 2003: 189). It might unhitch itself from the physical connections which had hitherto bound it to proximate time and space and find reconnections in the intangible and unbounded realms of cyberspace. This conception of adaptive and reconstituted community was aided not only by the technological inventions which made free-flowing and disconnected communications possible but also by the reality of the physical movements of people around the globe: a result of increased wars, economic and political insecurities and the opening up of some national borders to migrant workers. Greater numbers of people were disconnected from their places of origin and to an extent not previously experienced. They reconnected in different places, thus widening and deepening cross-cultural experiences and encounters. The prospects for a very real form of transcultural and trans-global connectivity seemed better than they had ever been. Castells' notion of a 'cumulative feedback loop', feeding technological and social developments referred to the process whereby each impacted upon and was impacted by the other making new forms of connectivity not only possible but probable (Castells, 2001a).

As the emerging Internet broke free from its initial boundaries as an environment of information-sharing and collaborative work (most notably within the military through Advanced Research Projects Agency Network (ARPANET), then in settings such as JANET, the joint academic network in the UK) its wider potential was more easily recognised. From these initial collaborative but specialised and professional settings sprang the beginning of more generalised online social networking fora such as the Whole Earth 'Lectronic Link (WELL) set up in 1985 (Rheingold, 1994). These networks set out to improve communication between peers, facilitate research efforts and foster the sharing of ideas. Their pioneers wrote excitedly about these sites as mediated communities and proselytised on the possibilities which they opened up for knowledge exchange among the like-minded. Relationships in cyberspace, it was suggested, could be every bit as solid and lasting as those in physical space and sustained by similar, if not greater, relationships of trust and mutuality. Posters to the WELL, for example, always had to make themselves fully known to other participants by using their own names and were expected to follow set rules of decorum and behaviour. They were also expected to respect other users and to refrain from anti-social behaviour such as 'flaming' or 'spamming'. The collaborative nature of these sites was closely echoed by thousands of newsgroups, many hosted by Usenet, the difference being that here the topic of conversation was more closely proscribed, and sometimes moderated, to the particular groups' subject area.

While early pioneers of digital communities set out to demonstrate that communities could be stretched across the globe, the idea that place-based community was dead in the water was not universally recognised. Cyberspace has also been utilised in the strengthening of place-based communities. Inspired by the spirit of the early social networkers, the builders of community networks, also known as 'civic-nets', emerged first in the United States and then increasingly in the United Kingdom and further afield, and acknowledged that regions, cities, towns and even neighbourhoods might also benefit from the building of links within cyberspace (Evans, 2004). The ensuing networks aimed to harness the connective potential of the Internet to enhance communication and collective practices between individuals in physically existing neighbourhoods and cities. They acknowledged the strong identifications with place which remained characteristic of many individual and group identities. They also sought to build on these to (re)create community structures in cyberspace which were closely tied to the physical realm. Community networks keyed in to the civic and civil nature of

much social interaction and acknowledged by their presence that many people still felt a very real connection to land shared spaces and situated experiences. Reflecting these associations in the digital sphere, the builders of the civic-nets hoped to allow those who had been physically or socially disconnected from their significant physical spaces through disability, poverty, poor transport links or lack of social confidence to reconnect through place-linked portals in a cyberspace which could come to be regarded as equally familiar yet infinitely more safe and accessible.

In the seemingly egalitarian and truly democratic space which cyberspace promised, it was expected that new forms of political engagement would emerge and political interest groups flourish. In 1998 MoveOn.org, an organisation linked to the US Democratic Party, played a major part in the development of the e-petition by canvassing popular opinion through the web and encouraging the emailing of particular politicians over important political issues. Later global networks such as Avaaz.org opened up the possibility for trans-global communities of collective action and the development of a political consciousness which transcended national borders. In August 2008, Avaaz.org claimed that the previous 16 months had seen 8 million actions through their site, heralding '...a wonderful new source of global community and democracy'.[1] This was particularly relevant in the US context where the mainstream media remains dominated by very few providers and where the content is largely empty of analysis and context with very little space devoted to international news. In this media environment the use of the Internet as provider of an alternative voice and an independent media source takes on a significance which is largely absent from the UK context.

Campaigning sites such as Avaaz.org have reflected the internationalisation of political organisation which has occurred as a result of recent globalising tendencies in economics and politics. The Social Forums movement, for example, which developed from 2001 in response to the World Economic Forum, organised tens of thousands of anti-poverty activists and non-governmental organisations across the world to meet initially in Porto Alegre, Brazil and in different sites in subsequent years. In the early years of this century, a growing number of activists travelled outside their own nations to protest alongside others who shared their vision that another society is possible. They contributed to alternative DIY news channels such as Indymedia, inspired by the real-time reporting of anti-capitalist protests such as those outside the World Trade Organisation in Seattle in November 1999. Of course, such

opportunities have been taken up by groups from across the political spectrum. For every progressive and critical online pressure group another more conservative or extremist group also plied their messages and organised around them. Combat 18 in the United Kingdom, who take their name from the placing in the alphabet of the initials of their hero Adolf Hitler, infamously use the web to advertise the faces, names and sometimes addresses of anti-fascist activists to the world and their (often violent) followers, use the free-floating nature of cyberspace to evade national laws against promulgating hatred and violence against others. Once more, the media can be seen as reflecting rather than transforming existing states of being and thinking.

Since the rapid expansion in information and communication technologies from the 1990s, new forms of community have been seen in many different technological guises. Communities of interest, of attachment and of belonging, it is suggested, have surfaced in cyberspace and transformed social and collective experience. Digital technologies have been used to provide alternative channels of communication, to give the voiceless a digital space in which to lobby and put pressure on politicians and to demonstrate that there are alternative ideas in circulation. Through digital technologies, those who have never met have formed alliances and acted together to force change or to share ideas and experiences. Such technologies have also been used to reinforce existing social and physical ties by reflecting local places, histories and cultures.

Cyberspace communities in an age of digital commerce

The advent of Web 2.0 applications (DiNucci, 1999) and the easier sharing of files has moved the Internet towards the principles of user-generated content based upon participatory Internet cultures and has opened up even more growth possibilities for the 'space of flows' (Castells, 2001a). Yet rather than leading to the empowering of individual users, these technologies have been utilised by more dominant social and economic forces. In its early days, the uncolonised territories of cyberspace presented an opportunity to develop content in a place as yet unsullied by the demands of commerce and the pursuit of profit. It is easy to forget the clean and clear nature of very early cyberspace, devoid of flashing images and sounds, appealing only in the quality of its content and the written word, which could be better seen for the lack of surrounding clutter. Early forays into cyberspace were constructed around the exchange of ideas and the development of particular interest groups (Rheingold, 1994). This was a space unlike the outside world, in

many ways uninteresting to the image-conscious media of the late twentieth century until technological developments allowed the use of flash players, moving images and sound-files to excite and attract the user. Cyberspace was now ripe for its commercialisation and by the early years of the twenty-first century much of the cyberspace had been colonised by an economic imperative. Commercial organisations have subsumed the utopian ideals which drove the early pioneers for their own, less altruistic, goals. Nonetheless community has also been claimed within clearly commercial sites such as Ebay and Amazon (Lai and Turban, 2008: 392–393) which have increasingly utilised participative practices whilst enhancing the experience of consumption. Whether these can truly be offered as sites of community, however, is a moot point. Though championed as such by the very organisations which host them, they hardly speak to our essential humanity and connectedness. They can surely only be hailed as community formations if one subscribes to the idea that humanity is driven largely by commercial considerations and the need to efficiently consume within the capitalist marketplace.

The current generation of online social networking sites have enabled the further sharing of opinions, experiences and communication beyond geographical barriers (DiNucci, 1999). These sites differ markedly from the first-established networking sites such as The Well and are much more akin to an entertainment source – a fast-paced, colourful and constantly changing diary of the personal lives of friends and celebrities which can be dipped into at will. These are seductive sites indeed and appear to possess much that is akin to the construction of a truly global community of attachment by offering new spaces of belonging. Yet investigation into the use of these sites reveals that much of the connectivity which takes place therein is embedded in already existing spheres of interactivity and, whilst enabling pre-existing contacts to endure through great physical separation, they merely offer another, admittedly very flexible, medium in which already formulated friendships can be sustained. They are often more like an admittedly engaging and fun-filled party where peer groups swap experiences, tell stories and share music and conversation than a means to sustain attachment and meaningful connection to a social group. Only time and further research will reveal their lasting significance.

Studies indicate that the most prolific users of digital technologies have significant off-line social networks too (Boase, 2008, Macpherson et al. in Stern, 2008). This suggests that that use of new technology is not leading to the replacement of previous modes of communication but enhancing what is already present. Postill has remarked that ‘As the

numbers of internet users worldwide continue to grow, the internet is becoming "more local" ' (2008: 413) citing evidence that the majority of individuals posting weblogs, for example, do so to keep a small group of family and friends in touch with their movements, writing for what has aptly been named a 'nanoaudience'. At the dawn of the Internet, Postill argues, and until the mid-1990s, users of the Internet were so few and far between that they had to communicate with others over great distances. But now that so many more people have access to cyberspace, we have largely reverted to connections which are more local and knowable. At the same time, research in the United Kingdom and the United States has suggested that our circles of intimate friendships are growing smaller. Most famously, Putnam (2000) has suggested that we are increasingly 'Bowling Alone' and the work of McPherson et al. supports this proposition (cited in Stern, 2008: 608). Over the past two decades especially, individuals have become increasingly more reliant on their significant others and members of their immediate family as sources of support and comfort. In the United Kingdom, one Youth Trends study (*The Guardian 6th June 2007*) found that one in five young people say that they have no best friend to rely on, despite their generally enthusiastic participation in online social networking sites.

Whilst much has been made of the community-building possibilities of social networking sites, their reality is proving to be somewhat different. Some sites more explicitly ape the community of interest and aim to bring people together who share similar pastimes and professions – for example, in music, photography or video, sites like Myspace, Flickr, You Tube – but who may not have previously met. These sites are perhaps more akin to the Usenet groups of old which are still extant but diminishing in their use and popularity. Within these sites, as with newsgroups, individual members maintain control over content, unless there are complaints from other users or if legal restrictions applied. But now these are truly multi-media sites, allowing for more forms of creative expression beyond the text-based opinion of the past. Users choose their own 'tags' and 'keywords' (a 'folksonomy') to categorise and advertise their content to others. In this way, members '. . . form online communities comprised of people who share similar interests.' (Lai and Turban, 2008: 390). For the most part, however, these sites appear closer to a form of mass media than a community of interest, as users broadcast their own material to the wider gaze. This is mass media with a difference in that it is co-developed and directed by many users. Nevertheless their sites and pages act as a form of self-advertising, rather than of community construction. It is solidly ego-centric rather

than communal in its form. Would-be popstars, artists and film-makers can and do audition their talents to the widest audience possible by using these social networking sites. Furthermore, these online networks are as likely to be used by multi-national corporations, small businesses, third-sector organisations as the already famous to advertise their wares. The pull of technology utilised in the second generation of social networking sites suggests more individual user control over content and hints at the fully elective community celebrated by Wellman. However, such sites have been developed, primarily, for the making of profit and are replete with advertising and a commercial presence. The lucrative advertising space sold on these sites, the 'virtual advertising hoardings' of cyberspace can be as, if not more, intrusive as the billboards and advertising pushed into our physical spaces of interaction.

There is evidence too that interconnections in cyberspace have been largely unable to generate the innovative content for which the early pioneers hoped. The emergence of new virtual worlds such as Second Life – currently boasting millions of participants – have proved to be uncannily similar representations of the real world. These cyberworlds imitate our connections in real-world communities of place but far from leaving behind the madding crowd generated by the economic relations of late capitalism, our old worlds are followed and regenerated to a remarkable extent in the 'new'. There are no new visionary relationships which rest on a different conception of what the world could be like, no attempt to imagine and to create utopias inspired by critical thinking and alternative ways of being. Instead, and in a world where financial insecurity is rife, Second Life creates its own money markets and possess its own currency, Linden dollars, which can be exchanged for 'the real thing'. Land is privately owned, goods are produced and exchanged, avatars take on perfect human forms and available fashions and accessories mirror the designer markets in the physical marketplace. As a critical thinker inspired by ideas of socialism and human equality I find these new worlds to be fundamentally depressing and less than brave.

Final thoughts on community in the digital age

Decades of research into community have revealed it to be a fluid, porous and dynamic concept which is periodically reinvented. The persistence of appeals to community can be perceived as a rejection of the impersonal, the bureaucratic, the faceless conditions of late capitalism and as a restatement of the importance of networks of solidarity

and trust. These appeals also reflect a continued search to find essential human connections often under extremely difficult global and local conditions which increasingly serve to destroy the essential solidarity between people. As traditional spaces within which communities have been forged have disappeared, fragmented communities were supposed to realign with newly emerging, global forces, aided by the 'digital revolution'. In an increasingly fluid and shifting world new forms of community were supposedly found in a quest for belonging that were detached from common geographies and physical ties. It was also proposed that community after the digital would be built in open and democratic virtual spaces where individuals would locate and engage others to change conditions for the better.

However, the place-based nature of community has persisted. Continued attempts by national and regional governments alike to 'engineer' successful communities as a bulwark against deindustrialisation and the effects of neo-liberal policies have been further extended and strengthened by the influence of the communitarian philosophies which have proved to be a major aspect of 'third-way politics' in Britain and the United States since the mid-1990s. Following writers such as Amitai Etzioni (1997) community has been posed as a solution to the 'excessive individualism' characteristic of social and economic relations in the West in recent years. This suggests a 'total way of organising society' (Brent, 2009: 230) and an imposition of shared norms and values rather than allowing an organic growth of collective action from below. Communitarianism's appeal to the knowable relations of home, hearth and neighbourhood lies far from the trans-global and borderless world which cyberspace offered. This conception of community has fostered divisive, closely constructed and exclusive social worlds whereby insiders guard their status fiercely and outsiders are mistrusted and feared. It has contributed to the growing distrust of the unknown, of the foreigner and of difference which has contributed to the global growth of support for far-right and mono-ethnic political organisations and a retreat into old, known and trusted boundaries.

Connections which are digitally mediated, as the early pioneers suggested, could have served as key tools for the creation of oppositional and novel ways of living and working together. Powerful economic forces, however, have held sway and we seem generally unable to step outside the narrow confines of our increasingly fragmented and commercialised existence under late capitalism, no matter what medium is made available to us. Most Internet-based and digital 'communities' of the twenty-first century appear shallow and thinly stretched over the

spaces they inhabit rather than fostering deeply felt connections of common experience and activity. Freie (1998) warns against accepting all forms of 'counterfeit community', wherein the human search for connection and belonging – manufactured and packaged as a commodity – is presented as the real thing. Precisely because, as Wittel argues, in the knowledge economy there is far less capitalist value to be extracted from the material products of industry our human relations are commodified in their stead. In cyberspace – in many ways the ultimate networking medium – monetary value is extracted even from the places where our personal relationships are conducted. Wittel distinguishes between differing forms of connectedness, coining the phrase 'network sociality' to distinguish between 'informational' social relations, built on '... the exchange of data and catching up' and 'narrational' social relations which are the foundation for community. Narrational social relations, he argues, construct connections which are more solid, more enduring and '... based on mutual experience or common history' (2001: 51). Social networking sites such as Facebook and MySpace are commercial enterprises, in competition with each other for the financial benefits that they can glean from our need to connect; that new forms of community have been 'discovered' alive and well within mainstream social networking sites and enterprises such as E-bay and Second Life says more about our acceptance of the normative relations of consumer capitalism than it does about the possibilities of building different forms of community through new media.

The idea, then, that the digital age has extended, transformed and improved community, taking it above and beyond traditional (and therefore very un-modern) conceptions may work against the building of common interests. If we have indeed been sold counterfeit goods, it is likely that they will not serve our purposes as well as would 'the real thing'. As scholars of community, we need to more closely examine claims that new forms of networked sociality have propelled community to another, more significant level. We must also be prepared, where we have the evidence, to counter the idea that longer established forms of community have been surpassed and that they no longer retain their former significance. Talk of the 'digital revolution' has suggested to many that the material circumstances in which we operate have themselves been overturned, whereas in reality we are still struggling with the old uncertainties as new ones compound them. While we may have many more tools at our disposal with which to communicate, organise and bond, we have not yet moved into another realm of existence which has rendered the old ones completely obsolete. For community

is so much more than play, it is more than commerce, it is more than collective action which can also be divisive, transitory and episodic. It is rich, complex and contradictory but full of meaning and enduring significance. Community is anathema and may even be dangerous to a system which depends for its continued survival on the atomisation and fragmentation of society. Building solid, lasting and trusting community relations which are maintained outside of hegemonic relations of power can be read as an oppositional and fundamentally critical stance. Perhaps this explains the dilution and misuse of the term community which characterises much contemporary discourse on the subject. For to build true networks of solidarity and trust which cut across traditional boundaries and which lie outside of the normative framework of capitalism's particular economic logic might prove powerful enough to strike at its very core.

Note

1. Email dated 28 August 2008 to all subscribers from Ricken Patel avaaz@avaaz.org

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6

Afterword: Digital Spaces, Sociology and Surveillance

David Lyon

The idea of cyberspace is drifting into disuse. I have no brief to revive its fortunes. But it is worth observing that it does have some useful sociological dimensions when considering the notion of space in digitally mediated communications. In particular, it expresses some delicious ambiguities that serve as reminders of important multiple meanings expressed in some of the most useful concepts. It also foregrounds some ways in which the techno-social is implicated in emerging social relations across the warp and woof of social life and, additionally, is clearly not an innocent concept.

Cyberspace was lifted from Willam Gibson's futuristic, often dark, novels and, ironically, used by many to celebrate computer-mediated worlds supposedly freed from constraints of space and time. The term does strongly imply that computer-mediated communications (CMCs) are central, thus harking back to the crucial technological conjunction of computing and telecommunications heard in the phrase 'information (and communication) technology' (IT or ICT). But it also captures the notion that social relations are crucial to the mix; cyberspace is the space of CMC and thus also of potentials for modifications or even transformations of the social.

But in what sorts of ways might social life be affected by CMC or, put the other way round, how might cyberspace express emerging social relations? For many enthusiasts in the late 1980s and early 1990s cyberspace was a realm of emancipation and even an opportunity to slough off the messy materiality of life (see *inter alia* Turkle, 1995[1]; Wertheim, 1999; Robins, 1995). Somehow the etymological origins of 'cyberspace' were forgotten (see e.g. Mosco, 2004). The 'cyber' came from κυβερνήτης (kybernētēs), the Greek word for 'steersman' or 'governor.' In the thought of Norbert Weiner, who coined the term,

'cybernetics' is the science of control through feedback loops. In computing worlds, cybernetics was taken (in the mid-twentieth century) as a breakthrough in the control of processes and systems and, though today the socio-technical realities are far more complex, control, in contexts from the military to commerce, is still central.

Both Roger Burrows' and David Beer's chapter on new concepts and Karen Evans' chapter (Chapters 4 and 5) about community are about what might be called cyberspace. For the former, the focus is on the pressing need for new social scientific vocabulary to cope with changes on the techno-social realm. They stress the connections between science and technology studies and invite special consideration of objects, 'logjects,' 'spimes,' and the 'technological unconscious.' For the latter, the question is more what to do with older concepts still present in the sociological lexicon. Community is the concept chosen by Evans and she explores its use both as a critical and as a descriptive tool for examining CMC. There is a huge literature on this and the path she charts through it uses community normatively as well as descriptively to raise critical questions about digital mediation.

Neither chapter interrogates social media in depth but this fast-growing phenomenon neatly illustrates some of the sociological issues with which each chapter is concerned. I shall use it here as a foil for relevant arguments that may be made in relation to both approaches to a sociology of the digital. Social media are normally understood as web-based services that enable users to share content with each other, be it news, messages, photos, videos. Some of the best known in the English-speaking world are YouTube, Digg, Flickr, Twitter, Facebook and, most recently at the time of writing, Google+. The very name, social media, draws attention to the basic interaction between the social and the technical, such that it could never be reduced to a merely technical or a merely social entity.

Social media have rapidly established themselves as means of communication and interaction for very large populations and not merely tech-savvy people in their 20s and 30s. They prompt important queries about space not least because their use is often location-related, whether for mundane meetings facilitated by mobile devices or for major political demonstrations such as those in several Arab countries in 2011. Social media are used in conjunction with other, established media, such as radio, television and newspapers, and in organisational and institutional settings as well. They have high commercial value and are highly successful at tapping into cultures of entertainment and marketing. Facebook seems to set the pace, now boasting more than half

a billion users and making its young founder, Mark Zuckerberg, the world's youngest billionaire.

However, such a description remains very thin. These are the sorts of things that most informed citizens are aware of, whether or not they participate directly in the world of social media (one could, for example, learn much of this from a movie such as *The Social Network*, 2010). What is missing is in fact some of the same items that were little discussed in relation to cyberspace in the 1990s. Firstly, analysis of that phase of Internet activity tended to miss the significance of code, something that was partly remedied by Lawrence Lessig's *Code and other Laws of Cyberspace* (1999). That is to say, the role of software was underplayed, as it shapes possible outcomes through its code lines of instruction and algorithm (Kitchin and Dodge, 2011). Secondly, early discussions of cyberspace focused almost entirely on social interaction taking place through computer terminals and thus diverted attention from other new communications media. Such discussions failed to note the rise of another novel medium, mobile telephony. All kinds of reasons may be offered for this inattention, such as that cell phones seemed at first merely to extend already-existing telephony and that they often burgeoned outside North America and Western Europe, where most analysts worked.

Karen Evans observes that debates over community were temporarily revived in the 1990s as the Internet began to offer new modes of connection for people who were geographically distant. The collusion of propinquity and close social ties was doubted as communities of interest grew online. Although for Manuel Castells, 'place-based sociality' was giving way to a 'network society' where the Internet was becoming central, Barry Wellman cautioned that the empirical evidence points towards the emergence of 'networked individualism' rather than some notion of community (Castells, 2001; Wellman, et al., 2003). Nonetheless, Evans argues, hope was still vested in new media to compensate for the perceived loss of geographically based community in neoliberal times. But in reality, she says, the new media tends to reflect rather than to transform existing social relations. In the end, she is sceptical that commercially oriented services can speak to our 'essential humanity and connectedness'.

This probably requires some further unpacking, largely beyond the scope of a short paper. On the one hand, Evans sees community as a viable concept for describing relations of trust, locality and shared experiences. On the other hand, she argues that the present juncture of transnational capitalism with its superficiality and its consumer

orientation – expressed among other things in social networking sites – is inimical to the flourishing of community in her sense. Hers is a cautionary tale in which the many-splendoured story of community analysis falls on hard times both within contemporary capitalism and especially when it is dependent on new media. This is not to say that trust is completely eviscerated, or that shared experiences of people in localities cannot be mediated in part online, but rather that, as a general trend, information capitalism is unfriendly (Facebook friends being a paradoxical case-in-point) to community as Evans defines it.

However, sociologists might wish to examine further the issues raised by the question of social media and community. For one thing, actual ethnographies of Facebook suggest that the phenomenon known collectively as social media is more than a 'medium', it actually helps to constitute relationships in some ways (including ones that relate to 'community'; Miller, 2011). In this context, secondly, it is worthwhile exploring what contribution the Burrows' and Beer's chapter (Chapter 4) could make to Evans' analysis. Their focus on which concepts help explain contemporary techno-social relations may throw light on the conundrum posed by Evans. Burrows and Beer concentrate on Thrift's 'technological unconscious', the world of code which, through instructions and algorithms, not only mediates but also constitutes social interactions and associations. Many objects used in everyday life – like DVD players – depend on code, while others, 'logjects' (Dodge and Kitchin's word) also record their status and usage.

So-called social media depends on computing and communications technologies, areas that became increasingly integrated during the twentieth century. However, their union was achieved primarily in fixed locations. The fixation on cyberspace, at the start of the twenty-first century, distracted attention from mobile telephony and many theorists failed to see the growth of cellphones as parallel means of communication (especially in developing countries). Their increasing convergence was thus only picked up rather late in the day. Significantly, more than 200 million of Facebook's (now more than) 500 million users gain access through mobile devices and more than 70 per cent of Facebook users are outside the United States. Of course, many of those mobile users are American, but many are not. Thus, cell phones have at least in part become in time the very means of cyberspace; social media is nothing if not the embodiment of this conjunction.

In Kitchin and Dodge's terms, those cell phones, especially iPhone and Blackberrys, are logjects. They record their status and usage and are thus, among other things, implicated in forms of location tracking,

which indeed some of their applications facilitate. From the surveillance standpoint, then, these particular machines have even more extensive capacities, well beyond geo-demographic data-mining for marketing. They can report the actual location in real time of the user and that becomes part of the life-path of that user. The device helps to constitute the activities of users in mobile as well as in static situations. Such capacities have both positive and negative aspects; they permit connections to be maintained with one's associates and family members despite unpredictable mobility and thus a degree of mutual knowledgeability that may in some respects echo those of long-term proximate communities, but they also increase the users' vulnerability to marketing and also, more profoundly, to social sorting, now based on location as well as other data.

According to Crang and Graham (2007, also discussed in Burrows' and Beer's, Chapter 4), new assemblages form in these techno-social environments, with digitised spaces having a number of characteristics, the most significant of which is 'transduction'. This last category entails not only a shift from analogue to digital (augmentation) and the embedding of coded devices in everyday things (enactment) but also in the ways that technology – software – instructions, algorithms – makes things happen through various practices. In the worlds of social media, complex assemblages of algorithms, databases and classificatory systems connect users with many other bodies beyond their 'friends' not only to help shape their consumption but also in ways that shape outcomes in health, welfare, education and the like. Today's social sorting is a highly complex, decreasingly visible amalgam of private and public bodies that utilise personal data harvested from, in this case, social networking and often mobile devices, in ways that help to reproduce and sometimes exacerbate social divisions and difference. In Oscar Gandy's words, the arcane and technical 'rational discrimination' occurring routinely within such assemblages produces 'cumulative disadvantage' for certain already marginalised groups in a given population (Gandy, 2010).

Newer forms of surveillance, such as those facilitated by social media, face in two directions at once. Fresh forms of democracy may be served by the lightness and instantaneity of mobile media but the same data-flows may also act in quite undemocratic ways, bolstering the power of the already advantaged even blocking access to basic necessities. But the same was true of early modern forms of surveillance, too. In instruments of democratic participation such as electoral registers, for instance, citizens could be assured of their own unique vote, but the same data

enabled governing bodies to see them more clearly, to make them more legible to the nation-state (see Scott 1999, Abercrombie et al., 1983).

Thus, as Kitchin and Dodge (2011: 19) say, code/spaces and their discursive regimes work to reinforce and deepen their logic and reproduction, at the same time as others seek to undermine, resist and transform their hegemonic status. Software opens up new spaces as much as it closes existing ones. This does not happen in totalitarian or panoptic ways but rather in a constantly rippling and pulsing fashion, the tides and currents of data-flows sometimes in confluence, sometimes in turbulence. In social media worlds the outcomes are not predetermined but they do depend on the activities of users in conjunction with the sort of tech-agency (through software) described by Burrows and Beer. And, importantly, they are never innocent. Thus, the mantra of 'user-generated content' has to be understood not as some free creation *ab nihilo* but framed and even in part constituted by codes of commerce, entertainment and government.

Let me return to the original questions: if there is to be a worthwhile sociology of the digital, these two chapters ask two questions: firstly, what to do with old concepts, like community, that purport to have both empirical and normative dimensions? My suggested response here is not to say, abandon the concepts. They may yet have some salience in the emerging techno-social worlds. When Evans reveals her hand with the phrase 'Building solid, lasting and trusting community relations which are maintained outside of the hegemonic relations of power can be read as an oppositional and fundamentally critical stance' she is indicating what sort of normativity she has in mind when criticising utopian dreams for CMC-generated 'community'.

Though space lacks to expand on this here, I suggest that exploring the nature of social media (for example) using disclosive ethics would be a good start. If the *politics* of CMC and social media has to do with 'closure' – decisions for one access model followed by actual implementation for instance – then *ethics* is concerned with what (or who) is excluded as part of the routine material operation of power. And as power is often hidden in the digital world (as it was in the original panopticon plan, of course), part of the ethical task is to disclose the workings of that power (Introna, 2005). This kind of approach may be linked, in turn, with ethics more broadly construed. The disclosive approach, for instance, may itself be thought of as a moral imperative and that could be linked with, for example, the requirement for organisational transparency in democratic situations. The kinds of transparency to surveillance to which contemporary

populations are exposed are in stark contrast to the growing opaqueness of organisations (Lyon, 2010).

Whatever one says about ethics, however, the parallel requirement is to check sociological concepts themselves – old and new – against what is actually happening in the present. This is the second question to be addressed. The work of Burrows and Beer and the authors they cite is one of the most exciting and potentially consequential ways forward for a sociology of the digital. Concepts like 'logjects' are particularly useful for considering the ways in which, to follow the examples used here, the protocols of social media are increasingly surveillant, especially when mobile devices (the example of logjects used here) are in use. Indeed, such concepts not only make the connections with surveillance but they also help to indicate the ways in which surveillance operates, as trails are left and tracking and social sorting are facilitated. This starts to connect with disclosive ethics as well.

A *caveat* is in order, though. All too often in the social sciences the quest for new concepts has remained at the level of providing better description and better explanation. These are worthy goals but in my view they can never finally be separated from the task of critique. Sometimes the sociology of science and technology in particular has restricted itself to a descriptive and explanatory task as if this could be divorced from political and ethical concerns. It cannot. This does not for a moment mean that other concepts – perhaps even like 'community' that has been used notoriously in ways that drain it of useful empirical content – should be used in cavalier ways. The plea here is for a two-way street between the search for concepts more adequate to the techno-social and especially digital present and concepts that have a clear ethical and political cutting edge.

Note

1. It is worth noting that Turkle has made a very critical turn from her earlier work in (2011).

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Part III
Structures

7
Inequalities in the Network Society

Jan A. G. M. van Dijk

Introduction

At the first sight, the claim that information and communication networks such as the Internet contribute to more inequality of information and communication seems rather odd. Aren't networks particularly appropriate to diffuse and exchange information among all those connected? Isn't the Internet a medium where you can retrieve most information for free and exchange emails, chats, twitters, SMS messages and others almost without cost? Hasn't the Internet become much more accessible and user-friendly since the days the World Wide Web started? Yet, in this chapter the claim is made that the actual use of information and communication networks, such as the Internet, in contemporary society most likely leads to more instead of less inequality when no effective policies are invented to prevent this.

To support this claim, I have to first define how contemporary society can be characterised and what types of (in)equality are at stake.

The concept network society is no alternative for the concept information society, but it is an addition to it. Both concepts are inextricably connected (van Dijk, 1999, 2006). Other characterisations such as capitalist society, democracy, post-, late- or high-modern society and environmentally (un)sustainable society remain equally valid. In the concept information society, the changing *substance* of activities and processes in contemporary developed societies is emphasised. In the concept network society, attention shifts to the changing organisational *forms* and (infra)structures of these societies.

Castells (1996, 1998, 2001) defines the network society as an informational society with networks serving as the basic structure of organisation pervading all spheres of this society. He considers networks as a

superior organisational form as they combine precise task performance with great flexibility, coordinated decision making with decentralised execution and global communication with individualised expression (Castells, 2001: 2). The author of this chapter (van Dijk, 1991, 1999) defines the network society as an information society with a 'nervous system' of social and media networks shaping its prime modes of organisation and most important structures. I consider social and media networks as the social counterpart of individualisation, the individual becoming the basic unit of contemporary modern societies. From the perspective of technology, media networks are an essential infrastructure of these societies. In the view of society, this applies to both social and media networks.

In this chapter, it will be argued that a number of structural properties of these social and media networks contribute to more or less inequality. According to structuration theory, these properties are always created by the communicative action of human beings.

What types of (in)equality come forward in a network society? According to Amartya Sen, every investigator of a problem concerning equality has to answer the basic question: 'Equality of *what*?' (Sen, 1992: ix). A first glance through the social-scientific and economic literature already results in ten potential answers that can be listed as technological, immaterial, material, social and educational types of (in)equality.

I will show that all these types of inequality can be observed in contemporary network society. The most popular is technological opportunities because physical access to computers, networks and other technologies has achieved the biggest attention. Considering demographics the three forms of capital and resources have been amply used. In the last few years the focus of attention is shifting to capabilities and skills, particularly when educational solutions to problems of inequality of access and participation are proposed. In this chapter, I will emphasise the material, social and educational types of inequality.

The presence of all these types of inequality in the network society shows that classical sociological concepts of inequality might serve as a valid background. Concepts of inequality in terms of possessions (Marx), status and profession (Weber) or relationship and power (Simmel and Dahrendorf) could still be relevant. However, we may also ask *whether these classical sociological concepts are still adequate to explain inequality in the information and network society?* This general question might lead to the following two other basic questions.

The suggestion in many investigations of inequality in the information and network society, for example in so-called digital divide

Table 7.1 Types of (in)equality and (un)equally divided properties

Type of (in)equality	Properties divided
Technological	Technological opportunities
Immaterial	Life chances
	Freedom
Material	Capital (economic, social, cultural)
	Resources
Social	Positions
	Power
	Participation
Educational	Capabilities
	Skills

research, is that this phenomenon is just as new as the technology it is linked to. However, the divides observed in fact are related to age-old demographics of income, education, age, sex and ethnicity, and no comparison is made with other things that are unequally divided in contemporary societies such as most properties listed in Table 7.1. Most often any historical perspective is lacking. However, there is no escape for the following basic question: *What is exactly new about the inequality of access to and participation in social and media networks as compared to other scarce material and immaterial resources in society?*

When this question is answered in an affirmative way (there are new aspects to be observed), this could lead to a second question: *Do new types of inequality rise or exist in the information and network society? If so, what are these types?*

I will try to answer these questions first describing a large number of structural properties of networks, both social and media networks. Some of them are liable to increase equality, others tend to support inequality. The balance sheet will decide whether the network society will be more or less equal as compared to older types of society. Subsequently, I will summarise my answers to the questions framed above. Finally, I will pay attention to potential policy directives that might counteract inequality when this becomes a goal.

Access and connectivity

A network is a collection of links between at least three elements or nodes. A link between two elements is a relation. As soon as the number of three is passed the questions of connectivity (collective property)

and access (individual property) arise. Are the fourth and next elements allowed to connect? Connectivity and access to and subsequently within networks (to all others in the network) are the primary structural properties that decide about network equality. They shape the frequently discussed issue of inclusion or exclusion.

This issue appears in both social and media networks. Social networks are of all ages, but in the transition between what is called the mass society or modern society and the network society or post- or late-modern society (van Dijk, 1999/2006) they reach a stage of development in which exclusivity becomes a striking characteristic. In traditional modern communities, many people were taken along in the solidarity of proximity in villages, neighbourhoods, work places and public meeting places. In post- or late-modern network society, individuals have to organise their own social network. This is marked by the high grade of selectivity that characterises network individualisation (Wellman, 2001; van Dijk, 2004). The number of so-called short-distance strong ties for the individual tends to decrease while the number of highly selective long-distance weak ties increases (Granovetter, 1973). In a network society, an individual has to stand firm and to fight for a place in particular social networks that give access to all kinds of resources.

The media networks that are built in the network society all start with the problems of connectivity and access. At first, they are only solved by the innovators and early adopters among the social, cultural and information elites. Passing the so-called *critical mass* – where access becomes beneficiary because connectivity is high enough: a sufficient number of others are connected – the early majority of the population reaches access. The present stage of telephone diffusion in the world as a whole is now crossing the phase from early to late majority: almost half of the world population still has touched no telephone according to International Telecommunication Union (ITU) figures! Diffusion is now going at a faster rate on account of the supply of mobile telephony in the Third World. Regarding the Internet we have to acknowledge that this important global network is approaching a diffusion rate of only 20 per cent at a world scale in 2009. Hugh inequalities of access exist. Even within the small continent of Europe, we have Internet access rates of more than 80 per cent in Northern and Western Europe while Southern and Eastern Europe lag behind with access rates of 40 per cent and less (van Dijk, 2009).

Access to and connectivity of social and media networks increasingly merge in a network society. Those who have less connection in social networks usually also have less access to and connection within media

networks. The combination of inclusion and exclusion of both social and media networks might be a powerful creator of structural inequality in the network society. It could create the following tripartite structure of the network society.

The core of this concentric picture of a network society comprises an information elite of about 15 per cent of the population in developed societies with high telecommunication and Internet access that have very dense and overlapping social and media networks. They are people with high levels of income and education, they have the best jobs and societal positions and they have more than 95 per cent Internet access. This elite lives in dense social networks. They are extended with a large number of long-distance ties used in a mobile lifestyle.

The majority of the population (50–60 per cent) in these societies has less social and media network ties and less Internet access, skills and use. The Internet applications used are relatively less of a serious and more of an entertainment kind (see below).

Finally, we have the unconnected and excluded part of society that is relatively isolated in terms of social networks and media network connections. They comprise at least a quarter of the population of (even) developed societies. They consist of the lowest social classes, the unemployed, a part of the elderly, ethnic minorities and a large group of migrants. They participate considerably less in several fields of society.

Such a dark picture of structural inequality does not have to appear, though many current trends go in this direction as I will argue in the remainder of this chapter. After all, connectivity and access also enable a wider dispersion of information, contacts, goods, services and resources than the media did before. The Internet offers a gigantic library of printed sources, pictures, video's and music, most often freely available to all those who have access directly or indirectly via others. Email offers instant access to all those connected to the Internet. It can be used by citizens and consumers to reach institutions, officials and shops. Consumers are able to make price comparisons and to unite with others to enforce lower prices. The Internet offers extremely cheap facilities to start one's own business on the Net. Lots of other opportunities for user, citizen and consumer empowerment can be mentioned. Only, the big questions are who will actually use these opportunities and for what purpose?

So, access and connectivity are structural properties of networks that can both increase and decrease inequality. They can lead to inclusion and exclusion. It depends on conditions. In any case, access and connectivity are necessary but not sufficient conditions for equal participation

in society. Physical access is required but the level of social and digital skills and actual usage of social resources and Internet sources decide about more or less equal participation (van Dijk, 2005).

Centrality

The most popular idea about the structure of networks is that it is supposed to be flat. As compared to traditional modes of organisations such as hierarchies and bureaucracies with their vertical, top–down structure networks are believed to be horizontally structured. The best known metaphor is the picture of a pyramid that is exchanged by the image of an archipelago. As networks are supposed to offer a decentralised structure, for example, in so-called peer-to-peer networking they are easily associated with equality and democracy. In my opinion this is a very one-sided portrayal of actual social and media networks. Real networks reveal a structure of differentiation and they regularly have a plurality of centres or cores. This goes at all levels, which means the level of society, organisations or associations and individuals.

In the former section, we have seen that the rise of networks is compatible with a structure of society that is marked by a core and a periphery. This is the structure that appears in Figure 7.1 indicating a single society. In the world system of societies that are linked in networks of

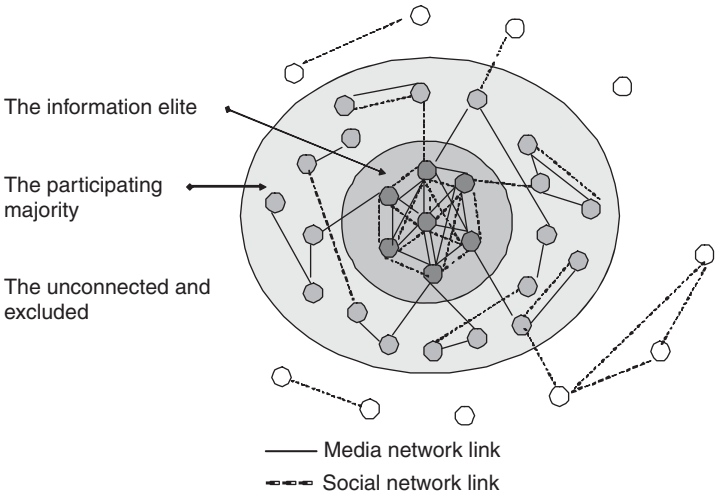

Figure 7.1 Potential tripartite structure of the network society

trade, transport and communication, the same core–periphery structure is likely to appear. Centres of trade and transport (ports and other hubs) are very unequally divided across the world. The same goes for traffic across the Internet, a (media) network itself. Northern America, North-Western Europe, Eastern Asia and Oceania comprise the vast majority of global Internet traffic.

At the level of organisations, concentrations inside networks appear equally big to those in the market. Markets supposedly also reveal horizontal modes of control and coordination with equal chances for market actors. In fact, we know that in contemporary capitalist economies vertical integration, monopolisation and oligopolisation often result. Network organisations that are linked in chains of departments or (semi) independent firms or government branches show regular patterns of core–periphery relations. The same goes for organisations providing ICT networks themselves such as Google, Microsoft, Yahoo, MySpace and eBay. According to Hindman (2008), news and media organisations on the Internet are even more concentrated than in the traditional press and broadcasting.

At the level of individuals, we can use the metrics of centrality in network analysis to show that the positions of individuals in networks can be very unequally divided. In Figure 7.2 a so-called kite network is portrayed with different measures of centrality. Unit or node D has the highest *degree*, that is, the highest number of direct links with other actors. In a directional network they can be divided into 'indegree' or

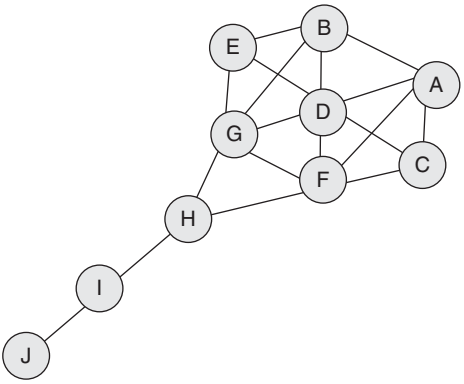

Figure 7.2 Kite network with different positions of centrality: highest degree (D), highest closeness (F) and highest betweenness (H)
Source: Adapted from Krackhardt (1990) and Bruggeman (2008).

incoming ties that can indicate popularity and 'outdegree', the number of outgoing ties that can signify expansiveness.

However, in Figure 7.2 unit or node F has the highest *closeness,* which means the extent to which an actor is close to or can easily reach all the other actors in the network. In this way, the unit is able to be fastest in accessing important or strategic information, directly or indirectly 'through the grapevine' (Monge and Contractor, 2003).

Finally, H has the highest *betweenness*, the extent to which an actor mediates or falls between any other two actors. This actor can be an intermediary or a broker or a gatekeeper and benefits from information others in the network don't have because they have no direct ties with the information source (in this picture I and J).

The meaning of all three central positions for inequality is that they enable to draw more social and material (scarce) resources or benefits than other positions. Charles Tilly (1998) has invented an appropriate name for this capacity: opportunity hoarding.

Variation and differentiation

So, real-world networks reveal a picture of differentiation. The structural background network property of differentiation is variation. In the following paragraph, this will be linked to the property of selection. This serves as an analogy to evolution biology because this combination can be used to explain the presumed superior quality of networks in organisation science that is called flexibility (Anderson, 1999; van Dijk, 2001). The analogy is often used in the theory of complex adaptive systems (Kauffman, 1995; Holland, 1995; Monge and Contractor, 2003). Adaptation occurs through constant variation. In the notion of everyday networking, this is known as the call that you have to vary your contacts, relationships and information sources in order to acquire better opportunities (for selection and survival). Every networker knows that one has to break out of one's own small circle of people. It is important to add a large number of weak ties, mostly at a distance to the less differentiated strong ties, often local, one already possesses (Granovetter, 1973). People with high degree, closeness and betweenness in network ties are better positioned to do this (these measures of centrality are both a cause and a result of variation). Others remain so-called isolates or members of cliques. These positions indicate increasing differentiation and clustering in a network when it grows. This also is a structural basis of inequality in networks.

However, the most important structural basis of inequality in both social and media networks is the *power law* that appears with variation in network links (Barabási, 2002; Buchanan, 2002). With the growth of a network the so-called 'the rich are getting richer phenomenon' or the *Matthew effect* (Merton, 1968) occurs. A power law indicates a distribution in which there are a small number of actors with a lot of links and a large number of actors with only few links (a long tail in the distribution picture). This unequal distribution tends to grow in networks making those already rich even richer (the Matthew effect). This is a structural property of the development of network ties. The mechanisms linking the structure to human action and consciousness are preferential attachment and contagion. In social networks, the most popular people attract growing attention, while nobody wants to be with the lonely person 'standing in the corner'. In media networks, the big portals and other sites increase their popularity assembling ever more links. They are supported by search engines such as Google and Yahoo that put the most popular sites on the top, in this way making them even more popular. On media networks, such as the Internet, the aids of search engines and other intelligent agents simply have to be used to reduce the information overload of sources. Additionally, we can observe the social and communicative processes of preferential attachment (popularity) and contagion (rumour, gossip and crowd behaviour on the Internet).

In this way, a *paradox of variation* appears: while in theory and in short-term practice variation increases the chances for equal opportunities as more chances are offered, in practice and in the long term these chances are reduced because in network links they become similar and concentrate in power distributions. The only way to prevent this from happening is a break with the social processes of preferential attachment and contagion in networks and the ranking practices of search engines and other intelligent agents. The importance of this phenomenon is big because the popular opinion is that the Internet offers equal and ample access to all voices and interests in society simultaneously. In fact, this medium might become even more concentrated than the traditional media. Matthew Hindman (2008) has shown this for the case of political communication.

Selection and competition

Networks are created by the selection of relationships among the variations just discussed by units. Units can be individuals, groups,

organisations and even societies. These selections depart from the proximate social environments of everyday life and social or family origin. They are outbound on a larger distance and are made to improve ones position. The aim is to find new sources of information, all kinds of resources, contacts, relations, dates, jobs and the like. While the proximate environments select people by birth, ascription or application, networks are selected according to norms of achievement and performance. The result is either inclusion or exclusion. This is not a permanent result as with birth and ascription but a temporary condition. Being included in a network, participants continually have to fight for their position. Networks are a social assembly that is both marked by continuing cooperation and competition. Therefore, the network society tends to be a harsh, individualised type of society, as compared to the relatively united traditional and mass societies (van Dijk, 2005, 2006).

Selection is a property of and activity in networks at all levels, from individuals to society at large. Selectivity is one of the main communication capacities of the new media (van Dijk, 1999, 2006). For individuals, it means that they are able to select in much greater detail than they could in the old media. This goes for favourite contacts using email or mobile telephony and for information, communication and transaction sources in the extended menus and site provisions on the Internet. High selectivity is the main characteristic of the extremely popular social networking sites such as Facebook, Hyves, Friendster or LinkedIn. When people would only select equals, these social media might support equality. However, the selectivity of the users of these sites might also increase inequality because people with at least equal and preferably higher status are chosen, not people with lower status, unless one simply competes for the number of 'friends'. In any case, users of social networking sites fight for social capital in this environment.

At the organisational level, the rise of segmentation and personalisation in customer-relationship and direct marketing can be observed. Hugh databases are created to select and differently approach particular groups of consumers. This certainly increases the inequality among consumers as some groups receive credits and special offers and others don't.

At the societal and governmental level, the practice of social sorting creates inequality among consumers and citizens. In social sorting categories, customers and citizens are generated with ever more ingenious techniques of data-mining. They stigmatise people. According to David Lyon (2007: 103): 'social sorting privileges certain consumers, clients and citizens over others, through differential pricing mechanisms or

through shorter and longer waiting times. The corollary, of course, is that the same automated processes produce neglect and abandonment for other groups.' As a consequence, social sorting is a problem not only for privacy but also for equality.

Differential mobility and speed

Except for these structural properties of networks that support or ameliorate inequality, we have a number of action parameters that are linked to the capacities of human beings to operate in social and media networks. The first of these is the capacity of mobility. Networks transcend place and time more than physical assemblies of people. However, not all people are equally mobile. The range of action among higher social classes usually is larger than among the lower social classes. The use of ICT reinforces this difference as it supports mobility, and the higher classes use this technology relatively more. For Manuel Castells (1996, 1998), this is the most important reason for the rise of inequality in the network society. According to him, networks create a 'space of flows' that overwhelms and pervades the age-old 'space of places'. Networks first of all link the most valuable functions, people and localities around the world, while switching off those populations and territories deprived of value and interest for the global capitalist economy (Castells, 1998: 337).

This means that some people are geographically and physically excluded from networks or that they only attain a marginal position within networks. Increasingly, the excluded and the marginal are doing local and mainly physical work, fixed to particular places. Simultaneously, those connected and occupying central places in the network through high mobility are using this advantage to find strategically important information and important new ties, jobs and functions at a distance. They participate in the 'jet life', in exclusive clubs and international congresses not even known to those who are excluded from or marginalised in networks.

Inequalities of skills

The second human capacity that determines the actual use of network properties is differential social and digital skill. Clearly, in social networks a high level of social skill is required and in (new) media networks an adequate level of digital skills. Taking the last type of skills first, it must be acknowledged that digital skills currently are the key for access

to the information society. In my digital divide research (van Dijk and Hacker, 2003, van Dijk, 2005, 2006), I have made a distinction between four types of access in succession: motivation, physical access, skills and usage. With the full-scale diffusion of the new media in society, the lack of motivation in adopting digital technology (for example, caused by fear and hate of computers) is getting less. Also, the lack of physical access to computers and the Internet is decreasing, even approaching a stage of universal access in the most technically advanced countries. However, the relative differences of digital skill and of computer and Internet use tend to grow with the diffusion of this technology in society (Howard et al., 2001; Hargittai, 2002; van Dijk, 2005). All existing social differences and inequalities come forward in the command of digital skills and in the differentiation of the length, variety and type of usage of the Internet (van Dijk, 2005).

Van Deursen and van Dijk (2008, 2009) have conceived an operational definition of digital skills and applied this to Internet skills. They distinguish four types of skills. The first is *operational* skills, the skills to command hardware and software. This is known as 'button knowledge' in everyday language. The second is *formal* skills: every medium has particular formal characteristics that have to be known and mastered. The Internet consists of sites and (hyper)links and requires skills of browsing and navigating. The third type of skill is *information* skills: the ability to find, select, process and evaluate information in computers and network sources according to a specific question. The fourth and last type is *strategic* skills: being able to employ the Internet as a means to reach a particular personal or professional goal.

Van Deursen and van Dijk have put a representative cross-section of the Dutch population to several performance tests of Internet assignments in 2007 and 2008 laboratory experiments, an altogether different approach than the usual approach of survey measurement. On average 80 per cent of the operational skill assignments and 72 per cent of the formal skill assignments were successfully completed by Dutch Internet users. However, the levels of information skills and strategic Internet skills attained were much lower. Information skill assignments were completed on average by 62 per cent and strategic skill assignments on average by only 25 per cent of those subjected to these performance tests.

All performances, both in number of tasks completed and amount of time spent on tasks, were significantly different for people with high, medium and low education. Age was the second most important correlating factor. However, this was only observed for operational and

formal skills. An interesting conclusion was that the so-called 'digital generation' (18–29) did not perform significantly better in information and strategic skills than the older age groups, despite the fact that the elderly people score lower on operational and formal skills. No gender differences were found.

Comparable results on the demographics of age and education were observed in performance tests of digital skills in the United States (Hargittai, 2004).

The command of operational skills, in particular, has a significant relationship with the amount of Internet use (van Deursen and van Dijk, *forthc.*). Amount of use, the type of use and Internet application favourites are also related to the demographics of social class, education, age, gender and ethnicity (see Howard et al., 2001; Horrigan and Rainie, 2002a; UCLA Center for Communication Policy, 2003 for the US). Social, cultural and personal interest and differential skills are the most important explanatory variables. I myself, together with others (Bonfadelli, 2002, Park, 2002, Cho et al., 2003), have observed 'the first signs of a *usage gap* between people of high social position, income, and education using the advanced computer and Internet applications for information, communication, work, business, or education and people of low social position, income, and education using more simple applications for information, communication, shopping, and entertainment' (van Dijk, 2005: 130).

Sociology and the theory of inequality in the digital age

In the preceding paragraphs, we have seen that the use of social and media networks in the network society favours inequality rather than equality, despite the fact that networks are able to diffuse information and to enable communication among more people than in older associations and media. Focusing on media networks, ICT should be analysed as a *trend amplifier* reinforcing social trends already occurring in society (van Dijk, 1999/2006). So, when social inequality in society is already rising – as seems to be the case in most countries of the contemporary world according to many observers that cannot be discussed here (IMF, 2007) – the use of digital media will primarily reinforce this trend. But how can we explain this rise of social and 'digital' inequality' with the classical concepts and theories of sociology? How can they assist in answering the three questions posed in the Introduction?

The first question is whether the classical sociological concepts of sociology in the field of social inequality are still relevant for

information and communication inequality in the network society. My answer would be that the following shifts would offer steps forward in approaching this issue.

Classical sociology departs from *individualistic* views of inequality and from methodological individualism in empirical research. Inequality of access to and usage of digital media is linked to individuals and their characteristics such as level of income and education, employment, age, sex and ethnicity. These are demographics that have a background in more abstract classical sociological categories such as possessions (Marx), status and profession (Weber) or power (Dahrendorf) and modern sociological categories such as social, economic and cultural capital (Coleman, Bourdieu and others). I think these old categories are still relevant today. The demographics and categories derived might be useful in surveys and experiments. However, the question remains whether they offer adequate explanations of inequality in an information and network society marked by digital media and networks.

For an adequate explanation an alternative notion of inequality might be more appropriate: a *relational* view using a network approach. Here inequality is not primarily a matter of individual attributes but of categorical differences between groups of people that have a particular relationship. It goes without saying that relationships are a primary analytical category to understand networks. In classical sociology this finds a basis in the work on social relationships and forms of Simmel and the socio-metrics of Moreno. Network analysis is an appropriate empirical research strategy.

A contemporary sociologist working with this view is the American Charles Tilly. In his book *Durable Inequality* (1998) he does not depart from the characteristics of individuals or social systems to explain (in)equality in contemporary society but from bonds, relationships, interactions and transactions. 'Large, significant inequalities in advantages among human beings correspond mainly to categorical differences such as black/white, male/female, citizen/foreigner, or Muslim/Jew rather than individual differences in attributes, propensities, or performance' (1998: 7).

Though Tilly speaks no word about media networks such as the Internet, I myself have tried to apply his approach to inequality of using digital media in the network society (van Dijk, 2005).

A second shift in sociological thinking is required to explain inequality in the *information* society. This would help to answer the second and third questions from the Introduction: what is exactly new about inequality in the digital age and are new types of inequality appearing?

Classical sociological concepts of inequality have emphasised material types of inequality with the exception of concepts focusing on power and status differences. Property, income and access to all kinds of scarce resources had the main focus of attention. In contemporary sociology, this focus still is on material types of (in)equality, for example, in the most popular concepts of social, cultural and economic capital. In the information society, attention has to shift to immaterial types of inequality that depart from the special properties of information that is both abundant and scarce. A number of economists, sociologists and philosophers have called attention to these special properties.

First, information is considered to be a *primary good* (see Rawls, 1971; Sen, 1985). Primary goods are material and immaterial goods that are so essential for the survival and self-respect of individuals that they cannot be exchanged for other goods, such as a basic (survival) level of income, life chances, freedoms and fundamental rights. Information has become a primary good in contemporary society as a particular – rising – absolute minimum of it is necessary to participate in it. Not all people possess such a minimum, for example (functional) illiterates. When digital media are gradually replacing and surpassing the analogue print media, they add another category on top of the traditional illiterates: the 'digital illiterates'.

Even more important than this absolute type of inequality in processing information is the increasing role of relative differences in possessing and controlling information in an information society. According to Castells (1996), information has become an independent source of productivity and power. Van Dijk (2005) adds that the relative differences between social categories, that were already unequal in terms of 'old' types of resources and capital, are amplified by the use of digital media. This happens because the control of positions in an increasingly complex society and the possession of information and strategic skills to acquire and maintain these positions are increasingly unequally divided. In this way, digital media usage contributes to new types of absolute and relative inequality on top of the old ones or they reinforce them.

This is backed by another characteristic of information. It can also be a *positional good* (Hirsch, 1976). These are goods that, by definition, are scarce – imagine the best places in concert halls and on beaches. Despite the phenomenon of information overload in society, information can be scarce in particular circumstances. Some positions in society create better opportunities than others in gathering, processing and using valuable information. I have emphasised that the importance of this condition is increasing in the nascent network society (van Dijk, 1999,

2005). In this classification of society, the positions and relations people have in social and media networks determine their potential power. As the importance of the media networks created by computers and their networks increases in contemporary society, having no position in these networks, or a marginal one entails social exclusion. – see Figure 7.1. Contrary to that, those that are very much included because they do have a central position, the so-called information elite, increase their power, capital and resources. So, this is a second effect of the possession of information in the information and network society that amplifies old inequalities.

A third amplifying effect comes from *information as a source of skills*. Increasingly, not material or physical access to digital media is decisive but the ability to use them and to turn this use to ones own benefit. As was discussed before, contemporary investigators of the digital divide find ever more evidence of growing relative inequalities of Internet skills and uses. In this early stage of development of ICTs, this already has effects on job opportunities and even wages. Two Dutch economists Centraal Plan Bureau/Central Planning Agency (CPB) have shown that the successful appropriation of ICTs creates a so-called 'skills premium' (Nahuis and de Groot, 2003). On the basis of very extensive quantitative longitudinal data of a large number of countries, they argue that the skills premium of having ICT skills is one of the main causes of increasing income inequality in these countries in the 1980s and 1990s. Recently, Goldin and Katz (2008) have shown that since about 1980 education in digital literacy and ICT skills was not able to keep up with technological development and that this has produced rising wage inequality in the United States.

To conclude: in the network society inequality shifts to positions, relationships and power in networks and in the information society it changes to competencies or skills to process and benefit from information. These moves produce new types of inequality that come on top of the old ones. Unequal competencies and skills are reinforced by unequal positions in social, economic, cultural and political networks and they lead in turn to an unequal division of material resources.

Policy directions

I do not want to leave it with this rather dark picture of inequality in the network society. The trends observed are not a matter of natural necessity. Policies are designed to counter these trends by broadening access to and within networks and by building the skills required to

process information. These policies can be divided into two big classes. The first takes the orientation of *equal chances or opportunities*, the second tries to achieve *equal outcomes* to a particular degree.

The less ambitious policy goal is equal chances. This can be divided in attempts to safeguard formal equal chances and in measures to realise equal material chances by the distribution of resources needed to achieve or maintain them. In government and telecommunication policy, the conception of equal formal chances appears as the broadly supported principle of *universal or public access*. In this context, this means that every citizen or inhabitant should either have a private connection to a computer and the Internet, preferably at home, but also students at schools and employees in working places (universal access). The other option is a connection in a public place such as a library and a community access centre (public access). Achieving this goal has been by far the most important principle of all policies concerned in the last two decades. Behind this principle of providing technological opportunities – see Table 7.1 – is a clear hardware orientation: everybody should have physical access to computers and networks. The common opinion was, and unfortunately still is that the problem of 'digital inequality' is solved as soon as everybody has a computer and Internet connection. The main impetus of this policy is to distribute the relevant hardware, including broadband connections and to connect schools, hospitals, libraries and community centres.

A step further towards the goal of equal chances is made by those who find that formal chances or opportunities of access are not enough in a society that is unequal in so many respects and that a particular (re)distribution of resources is necessary to create not only formal but also material equal chances. Policies based on this assumption usually support the principle of *universal service*. This means more than the availability of a connection (universal access); it means the provision of services every citizen has a right to, such as public information, health services and compulsory education. These services are realised and subsidised in the context of Internet provision by government and public agencies. Special attention can be given to disadvantaged groups and communities. Schools and community access centres are provided not only with connections and equipment but also with staff, software and educational tools.

With the provision of material chances, the transition is made to the policy goal of *equal outcomes*. This means that not only the conditions of access are supplied but also attempts are made to achieve a particular minimum of equal outcomes for everybody. This is not necessarily some

kind of socialist principle. Such a minimum is also widely known and accepted as the number of years and the obligatory results of compulsory education. In this context, it primary means the support of digital skills in education and by providing public or government websites that are simple, accessible and usable enough to be suitable for every citizen who can read and write. Following the analysis in this chapter, it is a vital condition of participation in the contemporary network society to have a minimum of computer and Internet skills of the four types distinguished above. This means not only operational and formal skills but also the 'higher' Internet competencies of information and strategic skills. They should be a part not only of primary, secondary and tertiary education but also of adult education of all kinds. Special attention can be called for the elderly, people with disabilities, functional illiterates and migrants only speaking foreign languages.

Recently, since about 2005 and the discovery of the so-called 'second-level divide', the official policies of governments are beginning to shift from a hardware orientation on physical access to an orientation on education and social and cultural Internet participation (van Dijk, 2009). A clear case is the European Commission that explicitly states in its 2010 action plan and the Riga Declaration (2006) that most support should be given to full participation and to providing people with basic digital competence. Not only governments, but also corporations, public organisations and individuals are obliged to invest more in a minimum of equal outcomes in digital media skills, use and participation in the network society.

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8

Trillions Out of Ones and Zeros: The Sociology of Finance Encounters the Digital Age

Juan Pablo Pardo-Guerra

Introduction

Global finance stands today as an exemplar of digital life, a system of knowledge, institutions and practices whose very existence hinges on the seamless streams of binary data that intertwine investors, analysts and trading venues across the world. From the ubiquitous glow of trading screens to the sophisticated servers and computer systems that populate stock exchanges, from the portable devices used by traders to enter buy and sell orders into the market to the transatlantic cables that distribute signals across sea and land, contemporary finance is clearly defined by digital technologies and the forms of action that occur through them.

Such a technological character would seem to offer little room for society and, consequently, for constructing sociological accounts of the nature and operation of the global financial system. In effect, it is not entirely uncommon to find representations of finance as a highly automated domain driven first and foremost by algorithmic mechanisms that, on the basis of the available information, determine actions, the design of investment portfolios, and the long-term strategies of large institutions and small investors alike. Financial markets are thus frequently rendered technological and, by association, stripped of their social content. Beyond a handful of analyses of the logic of greed, a sociology of digital finance would thus seem to amount to a sociology of algorithms and the machines on which they run, a sociological reconstruction of what are, in effect, relatively routine and automated digital events.

In this chapter, I argue that a sociology of finance not only remains possible but also, importantly, is theoretically stimulating and politically relevant – particularly in light of the rather turbulent events in recent global finance. Due to its centrality, finance offers a prolific object for sociological inquiries of contemporary societies. In this sense, the rise of the digital age both within and outwith the financial system must not be understood as a further disembedding of markets from the social structures of modernity but rather as an example of the constantly evolving technological fabric of economic action.

In arguing for the relevance of a sociology of digital finance, this chapter proceeds in two steps. The first is overtly descriptive. Specifically, the next section introduces the reader to different ways in which sociologists explored both analogue and digital finance in the twentieth century. The purpose of this review is to stress that the sociological gaze has changed along with the nature of financial markets. Consequently, like its objects of enquiry, the sociological gaze is understood as a prisoner of time and space, culture and contingency. The sociology of finance, hence, is a mirror of many sociological presents, of our enchantment or disenchantment with technology, and of our imagined pasts and promised futures. Importantly, the waves that defined the sociological literature on finance are not merely the product of new sociological 'discoveries'. They are, fundamentally, a measure of the incessant re-evaluation of our human condition.

The second step is resolvedly prescriptive. Specifically, the second section of this chapter explores some of the sociological issues that are relevant when confronting so-called digital formations in finance. Continuing the logic of the previous section, this section considers some of the possible areas in which the sociological imagination may provide a richer understanding of the global financial system. The themes touched upon are three, namely, the role of digital technologies in configuring market information, in the cognitive gears of the marketplace and in the materialities that serve as platforms for global finance.

This chapter concludes by arguing against the dichotomies that are often used when conceptualising the adoption of digital technologies across different spheres of social life. Rather than presenting contemporary (read: digital) finance as inherently discontinuous from its modern (read: analogue) precedents, this chapter favours understanding the digital formations of finance in the context of a broader material history of the marketplace. Within such a history, digital finance is undoubtedly different, insofar as it implies different tools, institutions and practices; the fundamentals of the system, however, remain eminently social,

anchored in social interactions, organised forms of trust, communal norms and regulation and collectively coordinated practices.

Studying finance

To know finance is to understand a fundamental field of capitalist action and thus a central element of contemporary societies. Today perhaps more than ever, the operation and nature of finance has repercussions on most prevailing forms of social, economic and political organisation. The sheer magnitude of financial markets is evidence of their critical position. As of late 2007, for instance, the world's financial assets – including equities, private and government debt, and deposits – amounted to $197 trillion, compared to a global gross domestic product of $54 trillion (Farrell et al., 2008). In the same year, the total market capitalisation of the domestic corporate shares traded in the London Stock Exchange represented 137 per cent of the gross domestic product of the United Kingdom (World Federation of Exchanges, 2007) and around 15 per cent of the capital stock of the nation (Wilson et al., 2007). And by 2009, the repercussions of an apparently manageable problem in mortgage-backed securities – corresponding to a mere $0.7 trillion or 2.5 per cent of the global market for private bonds and corporate loans (MacKenzie, 2008) – percolated into the larger economy, unveiling the interconnections between 'virtual' and 'real' economies and setting the stage for a crisis equalled by many commentators to the Great Depression of 1929. To understand finance is to understand a pivotal component of modern societies; it is, in a sense, paramount for grasping the subtle and entangled relations that underlie the present forms of technologically mediated economic life.

Finance, however, has taken numerous forms through time. The financial markets of the early nineteenth century, for instance, were based on status groups and networks of interpersonal trust, on the constant maintenance of closed organisations populated by known investors and their brokers and traders. The marketplace, in particular, was a highly embodied space: notwithstanding the first generation of electrical telecommunication technologies, the bulk of traders in financial markets met in closed halls to exchange bonds and shares, creating a cacophony of shouts, hand signals and facial gestures.

The classical traditions in sociology reflect, quite well, this early character of financial markets. Stock and commodities exchanges, private banks and wealthy financiers were frequently reflected upon in the writings of authors such as George Simmel, Vilfredo Pareto and

Max Weber. Simmel, for instance, considered finance as exemplifying the 'extreme acceleration in the pace of life' and the 'feverish commotion and compression' of modern societies (Simmel, 2004). Stock exchanges, argued Simmel, were clear manifestations of an accelerated modernity, assemblies where 'economic values and interests [were] completely reduced to their monetary expression' allowing for values 'to be rushed through the greatest number of hands in the shortest possible time' (Simmel, 2004: 506). Approaching the topic from a different perspective, Pareto deemed the waves of rising and declining confidence that characterised stock markets – reflected, for instance, in the fluctuation of prices – as exemplifying the 'rhythms of sentiment' observed elsewhere in ethics, religion and politics, and that were central to the constitution of elites (Pareto, 1991). Finance also provided a template of the mechanisms of political control, cooperation and institutional organisation that conformed social and economic action. In stock exchanges, Weber uncovered the control over wealth by the owners of capital through the creation of boundaries that differentiated insiders from outsiders, legitimate from illegitimate participants. In Weber's approach, stock exchanges were social structures, policed by their participants to guarantee access to a lucrative space of economic action. They were, for all intents and purposes, social structures of an economic orientation.

For these early writers, the relevance of finance resided in its embodying archetypes of economic calculation, political control and social order. But, importantly, finance was for them a clear illustration of the social mechanisms that gave form to modernity. Finance was not a realm of disembedded technological action or a space detached from the logic of everyday life. On the contrary, it was a matter of the same type of conversations, trust, status and forms of policing that shaped society at large.

But finance was far from immutable, and throughout the twentieth century, the market experienced a number of changes. Importantly, the floors of stock exchanges and dealing rooms throughout the world were populated by a variety of digital technologies – from computers that took over laborious forms of accounting to systems that disseminated prices across great distances and in real time. Markets were no longer constrained to the range of human voice or the temporalities of telephone conversations. On the contrary, digital market signals could now travel across time zones, free from the restrictions of space.

For the analysts of the bold new world, finance offered a glimpse into the possible configurations of the socio-technical future: just as the end of the Cold War symbolised the end of history (Fukuyama,

1992), the erosion of barriers for the trade of securities and the dissemination of information technologies, specifically in financial services, signalled the end of geography (O'Brien, 1992). Thus, for a number of sociologists, finance in particular and the economy in general could no longer be conceived as constrained to local circuits of close-knit contacts controlling material production, engaging in opaque transactions and establishing market values based on relationships and interpersonal trust. In today's markets, it was argued, information technologies render geography inconsequential, individual 'physical' identities are replaced by 'moral' and 'impersonal' corporate selves, and the patterns of exchange of 'old' marketplaces are substituted by digital transactions that leave nothing more than the 'ghosts of electrons' (Grundfest, 1988). In this mantra, the essence of society and its markets is rendered indistinguishable from the magnetic configurations of the cloud of hard drives that are scattered throughout the world; our existence is deemed as performed in and around software; our financial personas are considered the product of plastic, metal and bits; and our thoughts and emotions, remembered pasts and imagined futures, are cast as streams of signals compiled by an ever-present network of transducers, routers and processors. In this technological state of affairs, society has become a simulation of itself (Baudrillard, 1994), no more than interconnected flows of space, time and information.

Indeed, the early conflation of information technologies and finance entailed a very specific sociological imaginary, vividly expressed by the writings of Manuel Castells. For Castells, contemporary finance was the dominant layer of the 'new economy', an arena:

> where all earnings from all activities and countries end up being traded. This global financial market works only partly according to market rules. It is shaped and moved by information turbulences of various origins, processed and transmitted almost instantly by telecommunicated, information systems, in the absence of the institutional regulation of global capital flows (Castells, 2000b). [...] The outcome of [...] financial globalisation may be that we have created an automaton, at the core of our economies, decisively conditioning our lives. Humankind's nightmare of seeing our machines taking control of our world seems on the edge of becoming reality – not in the form of robots that eliminate jobs or government computers that police our lives, but as an electronically based system of financial transactions.
>
> (Castells, 2000a: 34)

Such a view resounded with the other narratives that claimed the apparently remorseless expansion of information technologies in private and public spheres. Effectively, for this sociological imaginary, finance was no longer shaped and controlled by the networked elites of yore. It was now a technological mechanism, spanning across space and cultural geographies, and serving as the homogenising kernel of the increasingly globalised economic world. The 'network society', as Manuel Castells called this life-form, was in the making. And with it, a new economic (dis)order arrived (Castells, 2000a, 2000b).

Socialising finance

The centrality of information technologies in the operation of modern finance by no means bars the possibility of a sociological account of contemporary markets. On the contrary, the adoption and use of information technologies and the consequent rise of a digital age in the realm of global finance entails a proliferation of social, organisational and political forms, rather than a flattening or homogeneous projection of the world onto a uniform digital substrate.

One analytical perspective is provided by the so-called 'new economic sociology' (Preda, 2007), which includes the work of authors such as Mark Granovetter (1985) and Harrison White (1981), who are largely recognised as seminal for a rekindling interest in the sociological study of economic life (see Baker, 1984; Podolny, 1993; Smith, 1989; White, 2002; Zukin and DiMaggio, 1990). The work of these and related authors offers, in particular, a cogent and sociologically informed critique of the dominant interpretations of economic interaction which reduce market exchange to a series of rational, utility maximising calculations. Within economic sociology, the models of human agency posited by disciplines such as economics are returned to the scope of sociological analyses. And in the reconstituted perspective of economic sociology, markets are not interpreted merely as mechanisms for the exchange and re-allocation of goods and services; they are, in addition, signalling systems embedded in a wider set of social relations that aid people and institutions to evaluate risks, deal with uncertainty and stabilise economic networks across space and time. Returning to some of the insights of earlier generations of sociologists – notably Max Weber and Georg Simmel – economic sociology sees market life as amenable to sociological critique, approaching finance as an empirically rich research topic.

The sociology of finance, however, extends beyond economic sociology. Specifically, there are three areas of research in which a sociological

approach offers a critical reassessment of finance vis-à-vis the emergence of the digital age. These three areas are described, albeit in a prescriptive mode, below.

Information and market action

At a first level, the new sociology of finance presents a critique of the widespread notion that the world of stocks, bonds and complex derivatives is entirely characterised by (disembodied, dematerialised and de-territorialised) 'flow[s], disembeddedness, spatial compression[s], temporal compression [and] real-time relations' (Lash, 2002). The new literature, in a sense, dissolves the dichotomy between the digital and the analogue by interpreting information as flexible, contingent and cognitively mediated. In other words, it does not suppose information as preceding social action but, on the contrary, as resulting from it.

For instance, for some sociologists, information is a surprise in the expectations of a particular setting that triggers reactions amongst market participants (Preda, 2010). Information, in this sense, can only be measured in terms of societal expectancies and as such is something that allows for a sociological description. For others, information comes in the form of highly mobile social facts, such as the London InterBank Offered Rate (LIBOR) (MacKenzie, 2007) or the ratings provided by peers and authoritative institutions (Pollock and Williams, 2009). In this view, information is the product of complex organisational interventions, of the construction and maintenance of trust, and the standardisation of instruments and forms of action and communication. And yet for others, information is an evolving (and highly political) category of market participants. From this perspective, the character of information hinges on the configuration of large, though ultimately local, sociotechnical arrangements. Digitalisation and other informational transformations are re-interpreted as changes in the relations between the classification systems upon which items are defined as being or not information and the practices that compose a specific domain. In the London Stock Exchange of the early 1970s, for instance, price dissemination systems were not considered entirely 'informative' by the community of brokers and market-makers on the trading floor. For them, the information allegedly contained in prices was accessible only on the trading floor and only through a highly embodied knowledge of the marketplace and its participants. The subsequent informatisation of finance in London required a change in the practices of the stock exchange, realigning the actions of market participants to the design of particular technologies and regulations. It was only then that the prices offered displayed by

information technologies were made 'informative', that is, only when they acquired actionable meaning for those in the marketplace (Pardo-Guerra, 2010). Changes in the organisation of the securities industry did not derive from a specific form of informational affluence, from the inexorable force of information flows upon social organisation or from some invisible market hand that saw in digitalisation a natural improvement upon face-to-face interaction.

Insofar as information is presented as the outcome of social interventions, as the product of a chain of interactions that precede a market transaction, it must be considered a valid sociological object in its own right. Digital entities in finance are no exception. Ultimately, digital systems are but specific mediums for presenting, communicating and working with data. And it is here where an opportunity for sociological exploration emerges, as the value and meaning of such data is ultimately gauged through specific social actions (for instance, through the forms of socialisation associated with training as a junior analyst). The sociology of digital finance has therefore plenty to say about how information is created, and much on this timely issue remains to be said.

Knowledge, spatial and temporal elements of finance

Like information, space and its relation to knowledge has also been the subject of re-evaluation within the recent sociology of finance. In analysing the practices of the marketplace, the flat topography hailed as the future of the new economy in the late 1980s, and early 1990s has acquired all sorts of nooks and crannies. The apparently ready-made transportable knowledge of the new economy, for instance, was made to reveal its contingent origins. As Karin Knorr-Cetina and Alex Preda argued:

> What we are confronted with today in areas of economic and social activities is the 'epistemic embeddedness' of these activities [...] Understanding knowledge societies in terms of a technologically propelled economic dynamic must be supplemented by an empirically based understanding of how economic transactions are themselves penetrated and transformed by epistemic practices. The 'epistemization of economic transactions' refers to a situation where these transactions rely on and are interstitched with multiple analysis processes and systems in a variety of ways.
>
> (Knorr-Cetina and Preda, 2001: 30–31)

The offices of investment banks, rating agencies and brokerage firms are not merely conduits for intangible flows of information. They are

processors and re-processors, sites in which knowledge is created, recreated and negotiated across epistemic communities; they are, in a sense, the (local) factories of (global) knowledge. In the financial marketplace, traders 'engage in knowledge work, in addition to making economic transactions' (Knorr-Cetina and Bruegger, 2002). As a result, global financial markets are transmuted into:

> social systems that correspond to a form of intersubjectivity, a microcoordination of consciousness that is equivalent to and extended beyond that which is possible in the face-to-face situation. [These] markets appear to be patterned in terms of structures (e.g., conversation structures) and mechanisms (e.g., interactional mechanisms of social governance) that extend this microcoordination. [...] The flow of observations that holds these markets together entails flows of knowledge; the coordination of consciousness [...] intersects with an exchange of knowledge.
>
> (Knorr-Cetina and Bruegger, 2002: 941)

Knowledge, however, is both historically and geographically specific (Thrift, 1996), making space as relevant for the analysis of digital finance as it was for its analogue predecessors. The spatial configurations of the financial system originate from both the affordances of the technological platforms of the marketplace as from the cultural geographies of knowledge of capitalism (Thrift, 2005). The realm of high-frequency trading, where investment decisions are taken by complex computer algorithms that acquire and process data day-in and day-out, is a particularly striking example of the malleabilities and rigidities of financial space in the digital age. While the systems designed for the use of an investment bank in Lower Manhattan are built by a global team – specialists based in Sri Lanka working in tandem with the London office of an Indian information technology company – the essential problem faced by the technologists is invariably local: to guarantee that the computers running the algorithms are physically proximal to the servers of the stock exchange in order to reduce the time taken for electronic buy and sell orders to travel from the former to the latter.

Materialities and financial practices

The significance of technological competencies in the operation of modern finance is indicative of a deeper trait of society that is often shadowed by the discourse of novelty and informational interconnectedness of the digital age: the reliance of systems and organisations on unseen though deep material infrastructures. In effect, the sociology of finance

has found an important theme in studying such infrastructures and the broader materialities that are the operational substrate of market exchange. As an illustration, grasping the interactions between the physical arrangement of trading rooms, where space and artefacts configure the creation of knowledge and its performance, and the cognitive processes of market participants prove fundamental for understanding the dynamics of market calculation. Markets are not merely about buying and selling. Tasks within the market require significant levels of specialisation and coordination in order to produce actions that are institutionally meaningful. And, as exemplified by modern trading floors, where different types of traders are arranged in a strategic manner in order to shape the possible forms of communication, material arrangements are critical for the operation of the market (Beunza and Stark, 2004). Indeed, the importance of materialities demonstrates that calculation is neither entirely 'mental' nor entirely delegated onto artefacts. Rather, it is a process distributed across a heterogeneous assemblage of people, institutions and things (Callon, 1998).

But technologies are not simply support. They are also action. Instruments as apparently simple as printed sheets of paper prove to alter the market in unsuspected ways. For instance, at a time when handheld computers were expensive and materially awkward, sheets of paper containing the theoretical prices of options as predicted by the Black–Scholes–Merton pricing model were used by traders on the Chicago Board of Options Exchange in deciding whether to buy or sell a particular instrument. By using these sheets, argue Donald MacKenzie and Yuval Millo, traders performed the economic theory used to derive the theoretical prices into reality: as traders adopted the sheets and their underlying model of options, the market came to resemble the predictions of theory; the sheets allowed theory to become reality (MacKenzie and Millo, 2003). And here, a connection with broader sociological traditions becomes apparent: following the logic of Robert K. Merton (Merton, 1948), through the sheets, the prophecies of one of the central tenets of financial economics were brought into being. Through its use, the Black–Scholes–Merton pricing model became a self-fulfilling prophecy that forever changed the financial world.

Conclusions

The development of finance in Chicago demonstrates that technologies as simple as paper and ink play a central role in the operation and reproduction of the marketplace. Prior to the arrival of automated

systems and global electronic networks linking antipodes in real time, the material arrangements of finance – from the urban setting that embedded trading to the location and shape of dealing posts on the floor of stock exchanges and to the placement of telephones, stock tickers, price display screens and day-to-day furniture – were essential in shaping the evolution of markets. Not only did they reflect and interact with the embodied character of face-to-face transactions but, equally important, they provided the material foundations for the attitudes and expectations of the securities industry and, to this extent, framed the technological evolution of finance. The pits in Chicago (Zaloom, 2006), the parquet of Paris (Muniesa, 2005), the pitches in London (Pardo-Guerra, 2010) and the specialist posts of New York configured in their own ways the technological choices taken by stock exchanges in each site. Materialities not only have physical weight in the present but they also possess historical weight, linking past practices and future expectations of the marketplace and its place in society. The gears of Castells' automaton are proving to be eminently complex.

New forms of digital finance are, in this sense, sources of interesting cases for exploring three sociologically relevant aspects of market life in the digital: First, the manner in which modes of interaction are negotiated, crystallised and enacted at different levels of the market, and through different systems, both digital and analogue. Second, the role of and manner in which knowledge is produced, packaged and mobilised by individuals, protocols and technologies throughout the world. How is it, in particular, that digital means further the expansion of the financial sphere? And third, the criticality and co-evolution of technology, practice and regulation in economic processes. Technologies, including those that configure the digital substrate of modernity, are mechanisms of regulation; it remains to be explored how such regulations are placed in the market both intentionally and unintentionally.

As digital technologies increase their presence in finance, new forms of practical and cognitive labour are bound to emerge. These, however, will not be determined by the information and communication technologies of today or tomorrow. As the recent literature suggests, to claim any centrality of digital technologies is to miss the point. To imply that a self-consistent domain of the 'digital' imbricates a separate domain of the 'social' (Latham and Sassen, 2005) is to lose sight of the contingent and situated character of technology, knowledge and practice. Indeed, the future scholarship on finance will not be served by upholding the dichotomies of digital/analogue, technological/social, future/past and revolution/tradition which fail to capture

the nuances of the sociotechnical interactions that bound and structure market institutions.

In this sense, the challenges posed by a sociological approach to finance are numerous. In learning from their disciplinary past, authors must be cautious of the rhetoric of novelty and discontinuity that surrounds technological innovation. But they must also be observant of the (often hidden and ignored) processes that lead to change in the financial sphere. In financial markets, scales are not stable, and what seems to be of mere local relevance can have large-scale global effects (MacKenzie, 2009): few would have imagined that the relatively simple computer systems designed to facilitate bloc trading within large firms in the early 1970s, for example, would become the template of many of today's global trading platforms. A design configured for a small locale, for a set of known agents, has become the pattern of a global system and its population of fluid, anonymous traders. Yet relating the interactional microstructure of finance to the spheres of global capital, technology, expertise and politics is no simple task. And writing a role for digital technologies that neither dominates nor lives in the margins of future narratives is equally difficult. It is, however, of paramount importance: finance remains (and will remain) a ubiquitous and foundational element of capitalist life.

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9

Digital Fields, Networks and Capital: Sociology beyond Structures and Fluids

Mike Savage

These two papers stake out the digital as the imperative sociological theme for the foreseeable future. On the face of it, the digital appears highly accessible and open. It is trumpeted as allowing information to circulate widely. Consumers can consult myriads of digital data to make informed choices. The expertise and judgements of professionals, politicians and businesses are open to unprecedented exposure through the assemblage and scrutiny of digital data sources. Consider Wikileaks or the British Parliamentary Expenses scandal in 2009 when digital records of the spending of Members of Parliament provoked huge public fury (see Ruppert and Savage, 2012). New kinds of 'crowdsourcing' methods involve popular mobilisation in the ordering of data (see Beer and Burrows, 2007. And so it is that governments throughout the world trumpet the democratic potential of digitalising information sources.

All this is true enough. And yet, as these papers show, the digital does not simply usher in an era of openness or accessibility. It is also implicated in the remaking of social structures, such as those which generate social inequality. It is no co-incidence that the last two decades have seen both a profound digitalisation of social relations and at the very same time a dramatic shift of wealth and resources to the most privileged social groups. The prime example here is indeed from the world of finance. This is a sector which has generated unusually marked economic divisions and, as Pardo-Guerra shows, has also been subject to major digital intrusion.

These papers reflect on how analysing the relationship between the digital and social stratification requires new sociological tools and concepts. This is no easy matter. As I've argued elsewhere (Savage, 2009,

2010), and as Pardo-Guerra shows in his subtle piece, this does not mean offering another 'epochal' account of change (as in the famous arguments of Manuel Castells about the network society which both authors critically address) where the digital is held to eclipse everything that came before it. Familiar epochalist refrains such as the rise of post-modernism, the risk society, and so on abound, but actually reproduce traditional modernist conceptions of linear time ('then' and 'now') which do not do justice to the profundity of the digital embrace.

Both these papers provide tools towards the need for an elaborated sociological perspective which avoids simplistic accounts such as the 'social effects of the digital revolution'. This involves a critical response to the widely trumpeted, yet reductive, idea of the digital divide, which identifies a binary division between those with access, and those without. Criticisms of this perspective are now widespread (see for instance, Halford and Savage, 2010), and both these papers extend these criticisms in important ways. Van Dijk here develops more nuanced differentiations, between the 'information elite', the 'participating majority' and the 'excluded'. However, sociologists still need to think more creatively about how they would develop an adequate conceptual armoury. Three concepts, raised in these two papers are worthy of greater scrutiny here: (i) information capital, (ii) machinic capitalism and (iii) digital social networks.

Information capital

One possible way of understanding the power of the digital, with a nod to Bourdieu's influential analysis of capitals, is to see information itself as a new kind of resource. Although Bourdieu himself focuses on the role of economic, social and cultural capital as the principle axes for inequality, he also refers to the role of 'technical capital' (Bennett et al., 2009; Halford and Savage, 2010) which seems pertinent. The argument might run that the ever more rapid transmission of information increases the premiums for those who have some advantage, however minute, in being able to access 'cutting edge' information, such as that which can be digitally accessed. In the world of finance, those able to deploy split second advantages in calculating trades are able to reap rewards.

This concept has some value, especially when associated with his concept of field, which draws attention to the way that agents engage in ongoing contestation for advantage. This permits a more fluid way of thinking about social structure which does not reduce it to a fixed, stable foundation, such as that of a 'class structure'. This kind of perspective

is germane to key features of social inequality: for instance the way that educational qualifications are associated with economic and social advantage (though there is a long and by no means conclusive debate as to whether educational qualifications are becoming more significant in affecting occupational success). It is consistent with the way that many labour markets are increasingly mediated by digital forms of communication, such as the use of 'LinkedIn' to recruit in many business environments. It is also readily compatible with the routine circulation of 'management information' in business and organisational environments. Informational capital can thus be seen as a resource for agents pursuing strategies for advance in unstable fields.

This is an arresting argument, but we need to identify four caveats. Firstly, and at the most fundamental level, we can reflect on Scott Lash's (2002) point that information, in and of itself, is not a vehicle for critical evaluation. Lash is mainly making his argument against critical intellectuals who seek intellectual tools for critical reflection against dominant, hegemonic currents. But the point can be generalised. Any agents wishing to strategically position themselves need to find additional means of doing this over and above the information provided to it.

This leads to a second caveat, which indeed can be derived from it. It is striking that in terms of bestowing advantages, an education in computer science (or business) still conveys fewer resources than those studying natural or social sciences, or even the humanities, whose exposure to digital communication is largely second hand and often sceptical. The construction of digital platforms does not simply flatten expertise so that anyone can pick up the appropriate skills. If anything, it seems to revive a familiar distinction between the 'pure' and 'applied' (or, in the British context, between the gentleman professional and the tradesman, on which see Savage, 2010) in which expertise continues to be defined at some remove from the digital itself.

Thirdly, it is widely recognised that there are major generational differences in the use of digital technology, especially with respect to social networking applications such as Facebook. If digital information is a form of capital, then this should mean that younger, rather than older people are advantaged. However, although some members of younger cohorts are now able to secure affluent employment relatively fast, it is by no means clear that age differentials have been substantially eroded in a way which one would expect if the digital is now a paramount resource.

Finally, the extension of digital communication appears not to have eroded the value of face-to-face, human interaction (see, notably,

Woolgar, 2002). In the field of education, for instance, Stephen Ball (2003) and Diane Reay et al. (2011) explore the way that educated middle-class parents garner extensive amounts of information about the schools which they might send their children to. The digital provision of school inspection reports and league table information allows new repertoires for the discerning to steal a march. Yet Stephen Ball (2003) argues that middle-class parents seek not only 'cold' information (such as from websites) but also the 'hot' information which comes from personal contacts. Similarly, organisations routinely complain of information overload, and a premium is placed on those who can distil key meaningful forms of knowledge from the proliferation of databases. There remains evidence that it is those who have benefitted from traditional forms of privilege – elite education, wealthy backgrounds – who continue to have disproportionate advantages. Knox et al. (2007) describe ethnographically the way that digital computer information systems need to be 'domesticated' so that they can be meaningfully interpreted by agents. Pablo-Guerra very usefully unpacks the rather different ways that information can be socially effective, noting that 'the character of information hinges on the configuration of large, though ultimately local, sociotechnical arrangements'. This amounts to saying that information is not, in and of itself, a form of capital.

I need to be careful in making my argument here. I think it is useful to retain elements of a Bourdieusian field analytical approach and to recognise the role of different 'capitals, assets and resources' (Savage et al. 2005). My concern here is that we should not too easily claim that information, in and of itself, is a capital, but that instead we need a more contextual approach to the way that forms of digital communication can operate.

'Machinic' or knowing capitalism?

A second approach might be to see the digital as complicit with a form of automated, machinic, capitalism, implicated in rapidly moving systems able to accumulate with remarkable intensity. This perspective can most usefully be associated with Nigel Thrift's (2005) conception of 'knowing capitalism', in which he sees the routine deployment of information systems as inherent to the contemporary organisation of capitalism. The ability of organisations such as Google to learn through trialling its own systems is a well-known case in point. As Pablo-Guerra discusses, financial trading is now marked by the proliferation of algorithm-driven transactions with no conscious agent, which are dependent on

automaticised digital processes. It is also clear that routine governmental processes deploy digitalised information in mundane yet powerful ways. More generally, the proliferation of metrics, audit devices and mechanical modes of accountability are all implicated in this process.

We might take from this observation that the proliferation of digital information has not, in fact, generated a new public sphere in which forms of democratic accountability can be practiced. In reality, it has allowed the commodification and privatisation of information in an unparallelled way. Consider the now notorious case of Tesco's loyalty card scheme. Those using loyalty cards freely enter full details of all their purchases into the firm's database run by their subsidiary market research company, DunnHunby. Each customer has his/her own unique DNA 'profile', indicating his/her specific spending patterns, and from this assumptions about their social and demographic status can be inferred (for instance, whether they have babies). It is argued that this database allows Tesco to monitor changing spending patterns remarkably quickly and is one reason why they have been so effective in recent years to allow them to become the dominant British retailer. This data is not publically accessible, however, and its manipulation is largely a corporate matter.

However, we should not only see the private sector as complicit with such databases. One topical example of these processes might be from English higher education policy. Here, recent Government policy which allows universities to charge up to £9000 is directly linked to a digital audit, in which National Student Survey results, data on employability, and so on are to be placed as 'Key information set' on public websites. Amoore's (2009) study of the UK government's e-borders policy, in which every journey across the UK border is digitally tracked and subject to risk screening, allows surveillance to take place without conscious human intervention. Ruppert (forthcoming) shows how digital processes in welfare services allow new modes of governmentality to operate, which are not attuned to surveillance on knowing human agents, but instead take as their focus transactions between agents. The mundane monitoring of 'switch-circuits' becomes central to contemporary governance.

One way of reflecting on these developments might be through reflecting on the familiar sociological argument that societies need both social and system integration (Lockwood, 1964). Lockwood noted a fundamental tension between the need for efficient systems (for instance, through a deregulated labour market) and for social recognition and effective citizenship (which might entail employment protection). Here

it might be argued that digital processes, through abstracting transactions from social and human context, also disembed economic from social relations and hence permit the dislocation of forms of capital accumulation from social legitimation and recognition. This could be seen to have profound, though also contradictory, implications. Digital communication can be used by both powerful and subordinate groups to mobilise – as the much discussed use of SMS in the British urban unrest in 2011 indicates.

This interest in the implication of the digital in machinic government opens up fascinating research issues. However, we again need to be careful not to rely on over-simplistic epochal accounts. After all, the theme that economic relations have been lifted out of social ones is highly familiar and can be traced back to Polanyi's claims about 'the Great Transformation', or indeed to Marx, Weber and Durkheim's pioneering sociological accounts of the development of capitalist modernity itself. Pablo-Guerra shows that it is too simplistic to focus on the automated algorithmic rhythms of digital financial transactions as if these have a logic in and of themselves. He instead notes that they are embedded within forms of social relations. The same point is made by Amoore (forthcoming) in her study of how aesthetic considerations are implicated in the deployment of digital information, in ways which rely on the judgement of discerning observers. We would therefore insist that digital information is webbed back into social and cultural relations in ways which doubt the view that the digital works mechanically and strips economic and political transactions out of their context.

Digital networks

This third framework lies at the heart of van Dijk's account which seeks to develop a social network analytic to understand the significance of the digital. As he rightly points out, this is a very exciting area of sociology, which has the potential to re-energise our understanding of the processes which generate social inequality. Sociologists have often understood social inequality as generated by a social structure which slots people into specific roles according to their attributes – such as class, gender, age and so forth. This tends towards an instrumentalised conceptualisation of inequality in which those with access to resources are able to gain advantages over those without such access.

By contrast, network approaches embrace a more relational approach to advantage, which is seen not as deriving from the possession of an asset, so much as the contextual position from which one can

strategically manoeuvre. Van Dijk pursues this approach by drawing on Tilly's ideas of 'durable inequalities'. Here, the capacity of groups to 'opportunity hoard' by storing up information can allow them to gain advantages. This might precisely explain how Tesco has been able to draw upon the informational stocks regarding their customers, for instance.

Here, the digital can be seen to allow the formation of mobile and dynamic social networks which permit complex forms of closure, brokerage and cleavage. Van Dijk tellingly focuses on the 'power law' which allows those who are 'network rich' to gain manifest advantages over others. He thus shows how Google algorithms allow those websites which are widely accessed to be presented to viewers immediately, thus ensuring that their popularity will be sustained. Here there is a nod to the arguments concerning 'machinic capitalism' which we discussed above.

This network approach is a powerful device and is backed by the increasingly sophisticated deployment of social network analysis which can unravel powerful patterns generating inequality. However, we need to be careful to recognise that networks work in complex ways. Here a good starting point is Ronald Burt's (Burt, 2005) arguments about the power of social capital in business environments. Rather than the most successful managers having the most extensive networks, it turns out that those who mediate 'structural holes' do best. These are managers who have unique ties to different cliques or groups, who would otherwise not be in contact with each other. This allows a focus on brokers and their role in mediating social networks.

This perspective on networks is important for developing a relational perspective, in which it is the tensions within networks, rather than the pure number or range of ties which is sociologically significant. Here, links can be drawn to Bourdieu's metaphor of the field, which shows how combatants struggle for position and advantage. This concept of the field has the advantage of emphasising how people do not pursue fully worked through and instrumental strategies for self-advantage, so much as more tactical and improvised actions depending on the position they find themselves in. Here, network connections play an important role in possibly allowing the formation of alliances with fellow players and in communicating to others.

Why is this field-derived approach to networks useful? It emphasises that digital networks do not operate through a logic entirely of their own, so that they can be seen as part of an epochal shift away from face-to-face interaction. Rather, they fold into numerous field-specific

relationships which pre-exist the digital. We are thus given a way of understanding how the digital interfaces with enduring forms of social inequality, in the process providing new twists and directions to field-specific contests and dynamics. A good example comes from studies of how forms of digital communication are associated with 'cultural capital'. The work of Hanquinet et al. (2011) and the BBC's recent Great British Class Survey demonstrates that the widespread use of social networking sites and surfing the net overlaps in powerful ways with previous forms of privileged middle-class cultures, as manifested through predeliction for 'high cultural' pursuits such as for classical music or attending art galleries and museums.

Conclusions

These two papers testify to the power of the digital challenge to sociology. In this afterword, I have argued that we need to avoid any crude epochalisms, in which the digital is held to presage some kind of new age, but instead place its significance in historical context. In discussing three ways of elaborating this argument, through the concepts of information capital, machinic capitalism and networks, I have suggested the need to go beyond a static concept of social structure towards a more fluid concept of fields and networks. This could pave the way for a rich analysis of the intersection between accumulating forms of inequality and the pervasiveness of digital communication.

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Part IV
Mediations

10
War Reporting in a Digital Age

Stuart Allan and Donald Matheson

Digital news coverage of warfare is a routine, everyday feature of our news media. From a citizen's cell phone imagery of Syrian troops shooting on protestors to the US soldier's personal recriminations in a blog post from Baghdad, to a news site's podcast relaying the sounds of gunshots in Darfur, to a television newscast's satellite footage of the latest turn in the Libyan civil war, this reportage has a profound impact on our perceptions of the human condition. 'Being a spectator of calamities taking place in another country is a quintessential modern experience', the late Susan Sontag (2003) maintained, 'the cumulative offering by more than a century and a half's worth of those professional, specialized tourists known as journalists'. This flow of news stories and images from distant places amounts to a torrent, featuring bloodshed at a seemingly ever-increasing rate – 'to which the response', Sontag added, 'is compassion, or indignation, or titillation, or approval, as each misery heaves into view' (2003: 16). This proliferation of digital technologies is re-writing the familiar forms and practices of war correspondence, often in surprising ways. The tragic events in Mumbai in November 2008 were a case in point, when the journalistic potential of social networking was suddenly made apparent.

During the hostage crisis, the role played by ordinary citizens using the micro-blogging service Twitter to relay vital insights attracted extensive comment in the press. Time and again, this then fledgling technology was singled out for praise as the best source for real-time citizen news. Even before reports of the attacks had appeared in the electronic media, it was providing eyewitness accounts from users describing what was happening the best they could manage under the circumstances. Examples of messages or 'tweets' (posts being limited to 140

characters), some of which were cited in various news items, included the following:

> One terrorist has jumped from Nariman house building to Chabad house – group of police commandos have arrived on scene.
>
> (anonymous, #mumbai channel)

> Special anti-hijacking group called Rangers entering Nariman House, at least 80 commandos.
>
> (scorpfromhell)

> Hospital update. Shots still being fired. Also Metro cinema next door.
>
> (mumbaiattack)

> Blood needed at JJ hospital.
>
> (aeropolowoman)

> Fascinating. CNN is filling airtime; #mumbai channel is full of tidbits posted by witnesses.
>
> (yelvington)

> At least 80 dead, 250 injured. American and British targeted.
>
> (ArtVega)

Saad Khan (2008), at the Green & White blog, described a 'Tweets frenzy' where 'minute-by-minute updates about the location of the blasts/skirmishes, positions of the security forces, location of the journalists and safe passages for stranded commuters', amongst other topics, were shared. In the hours to follow, the majority of tweets were either relaying secondary observations taken from mainstream news reports, correcting previous messages, or offering links to online sources for fresh perspectives. Examples of the latter were links to sites such as Google map, which documented the location of the attacks, as well as Wikipedia and Mahalo which constantly updated known facts. Videos in the dozens were being uploaded to YouTube, while Flickr displayed users' photographs ('Vinu' posting particularly grisly images). Sites such as Metblogs Mumbai, GroundReport, Global Voices, NowPublic, Poynter.org, and iReport.com, amongst countless others, were busy aggregating citizen reports. Meanwhile major news organisations, such as the BBC News, were moving swiftly to gather insights. NYTimes.com asked its readers in the city to email photographs or to insert a written description of events in the 'comment field' on its webpage. In the hours and days to follow, however, it was Twitter that won plaudits for capturing the rawness of the tragedy in reportorial terms. 'Last night',

Claudine Beaumont of the *Daily Telegraph* pointed out, 'the social web came of age' (*The Daily Telegraph*, 27 November 2008). Stephanie Busari (2008) of CNN agreed: 'It was the day social media appeared to come of age and signalled itself as a news-gathering force to be reckoned with'. This was not to deny its limitations as a trustworthy news source – serious criticisms having surfaced about inaccuracies and rumours being circulated – but rather to acknowledge the potential of social networking for first-hand crisis news, and thereby an important dimension to digital war reporting.

The digital tools of social networking have developed extraordinarily quickly, proving to be near-indispensible resources for reporters in conflict zones as well as those caught up in efforts to shape what is happening on the ground. At times, however, so much attention has been devoted to their perceived role in 'Facebook Protests' and 'Twitter Revolutions' that a certain 'fetishism of technology' – to use Evgeny Morozov's (2011) phrase – risks eclipsing a more nuanced understanding of the real-world politics at work. It is against this backdrop of a rapidly changing mediascape, then, that this chapter aims to contribute to current sociological discussions. Consistent across a wide range of enquiries, to the extent it is possible to generalise, is a concern with investigating the perceived alignment of war reporting with the national interest in times of crisis; that is, the pressures brought to bear upon journalism to ensure that it helps to create and maintain – even normalise – narratives of 'patriotic support' for the war effort. Some analyses go further, questioning the extent to which journalism has become complicit in promoting officially sanctioned definitions of the very nature of war itself, such that voices of dissent are effectively marginalised or trivialised, if not silenced altogether, across media spheres of debate and deliberation. Journalism, such critiques contend, has all too often found itself effectively transformed into a vital cog in the machinery of war.

In considering the ways in which these studies tend to characterise this relationship between journalism and war, it is readily apparent that the importance of technology – while frequently acknowledged – seldom receives sustained attention. This chapter, in endeavouring to discern the basis for a critical appraisal of the relative technological affordances and limitations engendered by digital war reporting, seeks to address this dimension. While efforts have been made to detail, for example, the convergence of media processes that allow reporters on the frontlines to relay video footage to their editors back in the newsroom, or enable citizens equipped with a cell or mobile phone to adopt the role of a journalist in the event that they find themselves in the wrong

place at the wrong time, questions regarding the digital mediation of warfare have largely eluded assessment. Too often sociological critique has become enmeshed in broader philosophical disputes about techno-spectacles of conflict at the expense of considering the implications for journalism's forms, practices and epistemologies. Perhaps the most notorious example in this regard revolves around Jean Baudrillard's (1995) *The Gulf War Did Not Take Place*, with its criticism of the hyper-real qualities of war coverage obsessed with a virtual simulation of violence (see also Hammond, 2007; Curtis, 2006; Jones and Clarke, 2006; Merrin, 2005; Norris, 1992). Such disputes, whilst interesting in their own right, provide the impetus for us to move beyond sweeping pronouncements – both celebratory and condemnatory alike – regarding digitalisation and convergence in order to gain a critical purchase on the issues confronting the lived materiality of war reporting. Accordingly, we shall adopt an alternative perspective here, focusing on the social contingences of the reportorial process so as to examine how technological imperatives are influencing what is reported, how and why.

War in a digital age

How best is to distinguish the evolving dynamics of war reporting in what is often characterised as 'the digital age' unfolding today? In formulating a basis to reply to such a question and thereby address its importance for sociological enquiry, we shall briefly assess several conceptual frameworks. Contributions proposed by James Der Derian (2001, 2004), a theorist of international relations, provide a useful point of departure.

'Technology in the service of virtue has given rise to a global form of virtual violence', Der Derian (2001: xi) contends, namely 'virtuous war'. In coining this term, which he acknowledges sounds like a 'felicitous oxymoron', it is his intention to underscore the tensions between 'people who believe you can use war to achieve ethical aims – that's the virtue part of it – and the virtual, how you can fight wars now from a remote distance and have minimal casualties, on your own side' (Der Derian, 2004). The danger at the heart of this contradiction, it follows, is the implied belief that military violence is the most effective means to resolve seemingly intractable political problems. 'If you have the technological superiority, and you believe in your ethical superiority, these factors combine to a very nasty effect', he adds. More likely than not 'you defer civilian diplomatic action and give the military the opportunity to step into this vacuum and offer up solutions' (Der Derian, 2004).

In advancing this thesis, Der Derian is maintaining that virtuous war evolved from the United States' rationale for deploying battlefield technologies in the first Gulf War and its aerial campaigns in Bosnia and Kosovo. Technical capability was aligned with a declared ethical imperative to actualise violence from a distance with minimal casualties to US forces. 'Using networked information and virtual technologies to bring "there" here in near-real time and with near-verisimilitude', Der Derian writes: 'virtuous war exercises a comparative as well as strategic advantage for the digitally advanced' (2001: xv). To wage virtuous war is to make every effort to remove from sight the victims of the violence perpetrated from afar:

> On the surface, virtuous war cleans up the political discourse as well as the battlefield. Fought in the same manner as they are represented, by real-time surveillance and TV 'live-feeds,' virtuous wars promote a vision of bloodless, humanitarian, hygienic wars. We can rattle off casualty rates of prototypical virtuous conflicts like the Gulf War (270 Americans lost their lives – more than half in accidents), the Mogadishu raid (eighteen Americans killed), and the Kosovo air campaign (barring accidents, a remarkable zero casualty conflict for the NATO forces). Yet most of us would not know the casualty figures for the other side, of Iraqis, Somalis, and Serbs. Post-Vietnam, the US has made many digital advances; public announcement of enemy body counts is not one of them.
>
> (Der Derian, 2001: xv)

Virtuous war, in other words, exploits digital technologies to project an ethos of killing in sharp contrast with previous forms of warfare. Fact blurs with fiction as virtuality collapses reality into computer simulations, thereby obscuring who is responsible – and thus to be held accountable – for killing others (for whom virtuous war is no less devastating in its horrors than any other type of war). Der Derian writes, 'One experiences "death" but not the tragic consequences of it'. 'In virtuous war we now face not just the confusion but the pixilation of war and game on the same screen' (2001: xvi).

To suggest that the advent of digital technologies has recast familiar distinctions between 'old' and 'new' wars is to open up for debate a number of intriguing issues. This distinction has been theorised by Mary Kaldor (2003, 2006), who offers an insightful assessment of its conceptual implications for thinking anew about warfare in a post-Cold War context. Briefly, in discerning what is new about 'new' wars, she

proceeds to argue that their emergence is contingent upon various – often informal, even inchoate – networks which advocate exclusivist causes (Diaspora groups, for example, often come to the fore in this regard). Moreover, new wars typically bring to bear an array of global actors, while tending to be 'concentrated in areas where the modern state is unravelling and where the distinctions between internal and external, public and private, no longer have the same meaning' as they did in 'old' wars (2003: 120). This is to say, conditions are ripe for new wars to break out where failed or failing states have lost their claim to legitimacy, usually due to declining economies (and thereby collapsing investment, production, and taxation) and increased corruption. Structural inequalities, including where unemployment and rural–urban migration are concerned, soon become entrenched in a manner likely to weaken the rule of law. War itself, then, becomes a form of political mobilisation, Kaldor contends, where 'the point of violence is not so much directed against the enemy; rather the aim is to expand the networks of extremism' (2003: 121). Techniques of terror, 'ethnic cleansing' or genocide become deliberate war strategies in the pursuit of specific political aims and objectives. Outright battles are rare; instead, in new wars, violence is directed mainly against civilians. 'Violations of humanitarian and human rights law are not a side effect of war', she adds, 'but the central methodology of new wars' (2003: 121). In this way, then, new wars are challenging prevailing perceptions of war itself. Once distinct local, national and global realms are seen to be converging, while traditional divisions – not least between war and crime – effectively blur into a particularistic, divisive identity politics.

Against this backdrop, Kaldor discerns three types of warfare, each corresponding to different models of state transformations evidently unfolding within the post-Cold War environment. In essence, the three types may be characterised as follows:

Network warfare. Kaldor uses this term to describe armed networks of state and non-state actors, such as units of regular forces (or other security services) as well as para-military groups, charismatic warlords, terrorist cells, religious fundamentalists, organized criminal groups, mercenaries, private military companies and so forth. These networks, consisting of loose horizontal coalitions, wage a form of warfare broadly indicative of the 'new wars' discussed above. That is to say, having evolved out of the guerrilla and counter-insurgency wars conducted in the past, today they are becoming increasingly visible due, in part, to the marked increase in civilian suffering engendered by their actions. Such networks appeal to a shared narrative – often based on an extreme

political ideology – as an organizing mechanism. 'The strategy,' Kaldor writes, 'is to gain political power through sowing fear and hatred, to create a climate of terror, to eliminate moderate voices and to defeat tolerance' (2003: 122).

Spectacle warfare. This type of warfare, Kaldor suggests, has been primarily undertaken by the US, although Britain was associated – at the time of the Falklands/Malvinas conflict – with the formation of its elements. Its defining feature is the conduct of war at a 'long distance,' either through the use of aircraft and missile technology or via proxies (such as the Northern Alliance in Afghanistan) so as to prevent own casualties. 'Spectacle war is the way the inherited structures of the Cold War period retain their power,' Kaldor observes, 'in a context where American citizens no longer accept the conditions of an earlier national bargain, the readiness to die in war' (2003: 123). The Gulf War of 1990–91 is widely regarded as a model for this type of warfare, where media management similarly played a role in ensuring that the impact of 'accidental' massacres (so-called 'collateral damage') was minimised where Western public opinion was concerned. For Kaldor, the concept of spectacle war 'emphasizes the function of war as a form of political legitimation, an ideology, in a context where citizens are no longer ready to sacrifice their lives and governments are no longer ready to guarantee the full range of rights' (2003: 126).

Neo-modern warfare. In introducing this term, Kaldor is highlighting 'the evolution of classical military forces in large transition states,' by which she is referring to countries – such as Russia, India, China and to a lesser extent Israel – where a centralized economy is being transformed into a more international, market-oriented system. In contrast with the US, such countries are prepared to risk casualties when threatening inter-state warfare or engaging in counter-insurgency against extremist networks. Crucial here, Kaldor suggests, is an illusion perpetuated by this type of warfare, namely that it is possible for the state to win militarily. 'The consequence is either self-imposed limits, as in the case of inter-state war,' she writes, 'or exacerbation of "new wars" as in the case of Kashmir, Chechnya or Palestine, where counter-insurgency merely contributes to the political polarizing process of fear and hate' (2003: 127). This illusion becomes all the more dangerous, of course, when the state in question possesses nuclear weapons.

These three types of warfare, while exhibiting relatively distinct features, necessarily overlap with one another to varying degrees in different circumstances. Significantly, Kaldor points out, none is capable of resolving conflicts, while all three cause indiscriminate suffering

for civilians. 'What these wars do', she writes, 'is strengthen extremists on all sides, weaken civil society and create a criminalized economy' (2003: 128). It follows, then, that there is no victory in the offing for new wars. Rather, their perpetrators steadfastly pursue the exploitation of fear and insecurity in order to mobilise political support for their goals.

In considering how violence is actually staged at the global level, Ulrich Beck (2007) usefully extends this line of enquiry by alerting us to what he terms 'risk wars'. Here he elaborates upon an observation made by Martin Shaw (2005), namely that 'sociological risk theorists have not generally paid much attention to risk in war' (2005: 97) by proceeding to attend to the 'transformation and pluralisation of war' taking place in the 'world risk society'. To clarify, Beck (2007) reminds us that risk presupposes a decision – and thereby a decision-maker – which necessarily revolves around a conflict of interests. Risk, in his words, 'produces a radical asymmetry between those who take, define and profit from risks and those who are their targets, those who must experience directly the "unseen side effects" of the decisions of others, who may even have to pay for them with their own lives, without being able to take part in the decision-making process' (2007: 140–141). To theorise risk in relation to forms of organised violence is to unravel this decision-making process – the actors involved, their aims and means – so as to distinguish within the 'clash of risk cultures' contending imperatives. In analytical terms, this objective leads Beck to differentiate between 'old', 'new' and 'virtual' war with 'globalized terrorist risk'.

Beck follows the general tenets of Kaldor's (2003, 2006) approach to 'old' and 'new' wars discussed above, before turning to Michael Ignatieff's (2001) notion of 'virtual war' developed in relation to the NATO bombing of Kosovo in 1999. To the extent that distant wars are presented as a 'spectator sport' for Western societies, the news media 'become *the* decisive platform, *the* production script from which the operation strategies of the military take their direction', in Beck's view (2007: 148). The importance of news coverage deserves close attention, it follows, when tracing how old, new and virtual wars, together with the anticipation of global terrorist attacks, have been seen to 'mingle, overlay and blend' in recent military conflicts (he cites war in Iraq, as well as in Lebanon). The concept 'risk war' is thus intended to address the 'confused mixture' of these varied dimensions. More specifically, he suggests that it has a twofold meaning:

> On the one hand, ['risk war'] designates – as it is understood by governments who employ the military means, at any rate – military

> interventions in foreign (not hostile), more or less unstable (both collapsing and stable) states with the goal of minimizing and controlling a 'global risk' (transnational terrorism, the proliferation of atomic, chemical and biological weapons of mass destruction, etc.). What is involved is a kind of global risk management with military means, though one which presupposes and/or replaces other diplomatic, police, judicial, economic, etc., initiatives.
>
> (Beck, 2007: 149)

At the same time, he adds, the concept refers to a second dimension, described by Shaw (2005) as 'risk transfer war'. Beck continues:

> By this is meant the new risk redistribution wars in which war is planned and conducted in such a way that, under the primacy of controlling risk and minimizing causalities, the threat to one's own troops is minimized and the threat to others is maximized. This leads to strategies of warfare (e.g. bombing instead of using ground troops) that shift the risk of deaths and casualties onto those who are attacked.
>
> (Beck, 2007: 150)

In recognising that both of these two aspects of risk war are interrelated – at times paradoxically so – Beck underscores the significance of their relative legitimation *vis-à-vis* the news media. At stake, in effect, is the 'spatial and social decoupling of war from casualties' (permitted, at most, are 'invisible deaths') which entails a 'risk transfer' or 'risk export' taking place, one that must be concealed lest legitimation crumbles.

This emphasis on legitimation in the transformation of wars into risk wars demands that greater attention be devoted to the ways in which the powerful impose their risk decisions onto others. Efforts to stage – that is, to legitimise – this imposition before global public are fraught with difficulties, of course, as has been seen with regard to the Iraq War where Western public opinion has shifted dramatically. Nevertheless, Beck insists, the 'unity of the power to produce and define is the source of the superiority of the global overdog over the global underdog', a process which situates news coverage – the ensuing stories and images – as a 'central theatre of war' in its own right because of this very '(de)legitimizing power'. Just as Western strategies of media management will strive to 'keep the despair over the dead and the devastation for the most part *in*visible', the opposite holds true for terrorist

attackers – every effort is expended to globalise images of suffering and horror (2007: 158). For political elites to preserve 'the official why-story of the war', news reportage becomes a site of discursive struggle.

The war for public opinion

The value of these schematic frameworks for thinking anew about war is readily apparent at a number of different levels. Scholarly treatments of war reporting tend to gloss over the nature of war itself, preferring to rely upon certain teleological assumptions about how the evolution of war fighting strategies has unfolded over the years. On those occasions when the familiar tenets of the 'old' wars of the twentieth century are challenged, more often than not they are regarded as exceptions to certain long-standing (Clausewitzean, in military parlance) beliefs in modern war as a rational instrument in the service of advancing state interests. And yet, it seems, the growing number of these exceptions – what Manuel Castells (2000) calls 'instant wars' – is inviting a radical reconsideration of the familiar assumptions associated with prevailing discourses of war.

The insights of Der Derian, Kaldor and Beck, respectively, help to illuminate the extent to which competing conceptions of war prefigure, to varying degrees, the mobilisation of public support. The importance of winning the 'hearts and minds' of public opinion – a campaign sometimes referred to as the 'second battlefield' by military planners – has long been recognised as a vital stake in its own right. Over the last decade, however, the tactics of 'perception management' have grown increasingly sophisticated. At the time of the US-led intervention in Kosovo, for example, military officials were striving to recast the military–media relationship in light of the lessons learned from the decade's earlier conflicts, beginning with the Gulf War of 1991. The advent of rolling 24-hour 'real-time' global television news services, with CNN leading the way, had helped to transform the conflict into a media spectacle akin to a video game. Largely displaced by this 'Nintendo effect', critics pointed out, were the consequences of war, that is, the horrific loss of human life. In the words of veteran war correspondent Chris Hedges (2002):

> The Gulf War made war fashionable again. It was a cause the nation willingly embraced. It gave us media-manufactured heroes and a heady pride in our military superiority and technology. It made war fun.
>
> (Hedges, 2002: 142–143)

The blame for this type of reporting, he argues, rests on the shoulders of the press for co-operating so closely with the military:

> Television reporters happily disseminated the spoon-fed images that served the propaganda effort of the military and the state. These images did little to convey the reality of war. Pool reporters, those guided around in groups by the military, wrote about 'our boys' eating packaged army food, practicing for chemical weapons attacks, and bathing out of buckets in the desert. It was war as spectacle, war as entertainment. The images and stories were designed to make us feel good about our nation, about ourselves. The Iraqi families and soldiers being blown to bits by huge iron fragmentation bombs just over the border in Iraq were faceless and nameless phantoms.
>
> (Hedges, 2002: 143)

There is little doubt that the ensuing 'sanitized' news coverage succeeded in shaping how media audiences perceived the nature of a 'clean war' waged with 'pinpoint accuracy' in profound ways. News management in the Gulf War, Phillip Knightley (1991) concurs, had at its core 'a deliberate attempt by the authorities to alter public perception of the nature of war itself, particularly the fact that civilians die in war' (1991: 5; see also Cumings, 1992; Keeble, 1997; Kellner, 2004; Reese, 2004; Taylor, 1992).

Sanitised news coverage, critics pointed out, was certain to produce de-sensitised audiences, passively observing each development in the 'video game war' with little regard to its implications (the contrast with Vietnam, the 'living room war', being all too telling). Journalistic efforts to enhance public understanding, to counter this obsession with immediacy with rigorous, in-depth reports offering interpretation and context, were being increasingly frustrated. Throughout the 1990s, Western news organisations were rationalised in the name of cost-savings, their budgets for international newsgathering slashed dramatically as economic pressures were brought to bear. The gradual thawing of the Cold War was a further factor, seemingly providing justification for what became a dramatic reallocation of resources away from specialised military reporting (freelancers became the norm as travel budgets were cut and foreign bureaus closed) in favour of more 'popular' (and 'efficient' – i.e. inexpensive) news stories. Some news executives insisted that this was simply giving the public what it wanted, pointing to declining viewing (and newspaper circulation) figures as evidence that international news could not attract the necessary advertising revenues to satisfy 'bottom-line' calculations. Less debatable was the fact

that owners were increasingly seeing news as a commodity, with some forms of it more profitable than others regardless of accompanying claims made about public service.

Peter Arnett, a household name for his reports for CNN during the Gulf War (he was the only Western correspondent in Baghdad for much of the conflict), was one of the several leading journalists to publicly express his discontent at the time. International news coverage in the mainstream US press, he argued, had 'almost reached the vanishing point' since the conflict in the Gulf earlier in the decade:

> Today, a foreign story that doesn't involve bombs, natural disasters or financial calamity has little chance of entering the American consciousness. This at a time when the United States has become the world's lone superpower and 'news' has so many venues – papers, magazines, broadcast and cable TV, radio, newsletters, the Internet – that it seems inescapable. So how is it that Americans have never been less informed about what's going on in the rest of the world? Because we, the media, have stopped telling them.
>
> (Arnett, 1998)

Far too many editors had simply embraced 'the canard that readers don't want foreign news', he maintained, even though contrary evidence was available, not least public opinion surveys. Meanwhile more upbeat assessments pointed to how CNN, in pioneering the concept of 'news on demand', had demonstrated that there was public enthusiasm for such stories so long as they were presented in ways that heightened liveness and immediacy. The trick, advocates of the emergent digital technologies believed, was to make the most of the 'new generation' of news gathering strategies promising to revolutionise war reporting.

From the vantage point of the 2003 war in Iraq, one would be forgiven for thinking that the news technologies employed during the first Gulf War seemed strangely antiquated. 'The big difference is that in 1991 everything was analog and now everything is digital', stated Dick Tauber, vice president of satellites and circuits for CNN. 'Back then, a satellite transponder could send a single video and audio channel to a satellite and back to headquarters. Now we can send half a dozen channels in the same amount of space.' Moreover, equipment had become smaller, lighter and more robust. Journalists wanting to do a stand-up report to camera, but unable to use a videophone, were able to press mini-portable television stations, called 'fly-aways', into service. 'In the first Gulf War, the fly-away was stowed in 30 cases, the size of luggage,

and weighed a ton', Tauber recalled. 'Now it's in 10 or 12 cases the size of a laptop and weighs much less' (cited in Megna, 2003). In 1991, the prominent role played by technology in war reporting – which also included email, facsimile or fax machines, night vision equipment, satellite imagery, computer graphics and even remotely operated vehicles for photography – was sufficiently novel to warrant press coverage in its own right. At the same time, journalists were discovering that this technology afforded their editors a greater capacity to monitor their movements and to make near-constant requests for fresh reports in order to meet the demands of around-the-clock reportage. Similarly attracting attention in this regard was CNN's influential role in telediplomacy, with the US and Iraqi presidents both using the network to communicate with one another, as well as with their country's citizens.

Current references to the 'CNN effect' on the conduct of foreign policy can be traced back to these early efforts to come to terms with the news cycle of real-time media. Likely to be seen as a more pressing concern than CNN's influence (now one of several such 24/7 networks), however, is the role of new media forms in reconfiguring the geometry of communicative power (see also Cottle, 2009; Hoskins and O'Loughlin, 2010; Matheson and Allan, 2009; Moeller, 2009; Seib, 2004). Howard Tumber and Frank Webster's (2006) examination of the journalistic practices of frontline correspondents has led them to elaborate a conception of 'information wars' to address this transformation. Efforts to understand the use of 'virtuoso technologies' to deliver 'astonishing pictures and sounds from the theatre of war' to audiences in distant places, they argue, must not overlook the wider information environment shaping the interpretation of unpredictable events and their significance:

> First of all, frontline journalists are not easily controlled or manipulated to act as conduits for combatants and their leaders. They have a strong disposition towards 'telling it like it is', they cling to notions of 'objectivity' and they have access to versatile equipment that allows them to report quickly and immediately back to their news organizations. Furthermore, the boundaries between fighting forces are often confused and, perhaps more important, journalists are such a diverse group that once-powerful appeals to support 'our boys' have weakened. Moreover, while embeds are severely constrained by virtue of their locations, news organisations now receive an enormous volume and variety of information. What gets into a finished programme or news report may be quite at odds with any single journalist's report.
>
> (Tumber and Webster, 2006: 172)

While military weaponry may reflect a massive asymmetry between combatants, it follows that there can be no corresponding assumption that it will engender long-term success in the waging of information war. In the age of the digital camera and the website, Tumber and Webster point out, weaker forces ('who are acutely conscious that the media are globalised phenomena') can disrupt, challenge and often counter the imposition of truth claims by the powerful.

Questions raised by these varied conceptions of war for public opinion are deserving of much more in-depth sociological investigation than they have received to date. Theoretical frameworks fit for purpose are slowly beginning to emerge, which are certain to be invaluable for efforts seeking to move beyond the more celebratory treatments of digital technology in order to gain a critical purchase on the issues that matter most for socially responsible war reporting.

(De)legitimising power

Assessing the extent to which personal digital media can disrupt ways of seeing war with which publics have become familiar (and therefore shift both elite and public opinion) is central to an understanding of their political role. Such work is beyond the scope of this chapter, but it can certainly be established that political and military actors talk and act in the understanding that they indeed have that power.

In the months leading up to his resignation as British prime minister, Tony Blair (2007) gave a series of 'legacy' speeches intended, in part, to help secure his place in the history books on his own preferred terms. In one such speech, delivered onboard the assault ship *HMS Albion* on 12 January 2007, he discussed the changing nature of the security challenges facing Western countries in the post-9/11 era. Interestingly, singled out for attention in this regard were the problems posed by 'a completely new world of modern communication and media' for the armed forces. In Blair's words:

> [War] is no longer something read in dispatches. It comes straight into the living room. Take a website like Live Leak which has become popular with soldiers from both sides of the divide in both Afghanistan and Iraq. Operational documentary material, from their mobile phones or laptops, is posted on the site. These sometimes gruesome images are the unmediated reality of war. They provide a new source of evidence for journalists and commentators, by-passing the official accounts and records.
>
> (Blair, 2007)

To Blair, such bypassing of official voices weakened the West's war against terrorists, for the pictures, in his estimation, contributed to public reluctance to support long military campaigns. 'LiveLeak' (www.liveleak.com), whose more controversial content has included digital photographs of torture in the Abu Ghraib prison deemed too disturbing by news organisations to show and the 'un-official' Saddam Hussein execution clip (which, in contrast with the 'official' version, documented the chaotic nature of the scene), is a prominent target of such official attention.

This attention has also included what some see as a veiled threat to make use of these media for political persuasive purposes. Former White House Press Secretary Tony Snow (2007) mused, in a briefing to news bloggers the day before Blair's speech, that in the months ahead US soldiers would be using their own cameras to post imagery on these sites so as to show the world what they were really seeing and doing (such footage, Snow insisted, would be more authoritative than that which is typically presented by journalists). For Torcuil Crichton (2007), in the *Sunday Herald*, Blair and Snow were signalling the coalition's determination to open up 'a new propaganda war' by encouraging frontline soldiers to post 'positive video news stories' to counter negative reporting. 'It wouldn't surprise me if governments already do it', Hayden Hewitt, one of the founders of 'LiveLeak', is quoted as stating. 'There is no quicker way of reaching millions and millions of people than through the internet and, as Tony Blair says, the old ways won't work any more' (cited in Crichton, 2007).

Underpinning the statements of both government figures and enthusiasts for what Blair called the 'unmediated reality of war' is a belief, then, that these emerging forms of reporting disrupt habitual ways of seeing war, with profound implications for the formation of public opinion. From the perspective of officials, this communicative power is legitimate only to the extent that it respects their definitions of reality. When soldiers' videos or digital snaps bypass proper channels, ending up on such sites as 'LiveLeak' or 'YouTube', and when civilians or even propagandists for Western governments' enemies post videos of their own on such sites, then control is lost. Indeed, to Blair, control is effectively being handed over to those regarded as terrorists to mediate what counts as reality. In explaining why this must not be allowed to happen, figures such as Blair are effectively forced to acknowledge a politics of mediation that complicates more customary forms of war-fighting rhetoric. This process of mediation is fraught with ideological tensions, perhaps most powerfully where 'common sense' discourses of patriotism come to bear.

To close, then, it is readily apparent that what counts as digital war reporting is in a state of flux, with familiar principles being recast anew by competing imperatives of convergence in the mainstream media. And by those of divergence being played out in the margins by 'the people formerly known as the audience', to use blogger Jay Rosen's (2006) apt turn of phrase. This chapter has taken as its focus some of the ways in which digital war reporting opens up alternative spaces for acts of witnessing across a range of platforms. Various forms and practices have been shown to throw into sharp relief the narrow ideological parameters within which mainstream news media typically operate. Journalists' routine, everyday choices about what to report – how best to do it, and why – necessarily implicate them in a discursive politics of mediation. The very multi-vocality at the heart of their narrativisation of reality renders problematic any one claim to truth, and in so doing reveals that witnessing is socially situated, perspectival and thus politicised. Before digital war reporting can become interactively dialogical in any meaningful sense of the term, however, it will have to counter the forms of social exclusion endemic to what Der Derian (2001) aptly calls 'virtuous war'.

At stake, in our view, is the need to deconstruct journalism's 'us and them' dichotomies precisely as they are taken-up and re-inflected in news accounts where the structural interests of 'people like us' are counterpoised against the suffering of strangers. To recast the imperatives of 'here' and 'there' and thereby resist the familiar pull of 'the official why-story of the war' (Beck, 2007), it is the corresponding gap between knowledge and action that has to be overcome. The implications for sociology, it follows, will be far-reaching. Bold claims made about technology-driven 'revolutions' in journalism risk obscuring what we have characterised as the lived materiality of war reporting, especially where the impact of technological change is overstated as a sudden, prodigious departure from previous convention. The appeal of this illusion, where one startling breakthrough follows another in a logical, rational sequence unfolding under the rippling banner of progress, is difficult to resist. But we must resist it for the reasons we have sought to elucidate in this chapter. The identification of technical innovations is crucial, yet equally noteworthy are the uneven ways in which these innovations are taken up, modified and recrafted to render them fit for purpose. Such a focus on the situated materiality of technology pinpoints the ways in which media institutions are being recast by the lived negotiation of its affordances and possibilities, as well as by its pressures and constraints. Hence, we would suggest the importance of seeking

to complicate some of the more technology-determined accounts of media digitalisation and convergence so as to discern the basis for a more nuanced sociological investigation.

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11

Imagining Networks: The Sociology of Connection in the Digital Age

Allison Cavanagh

Introduction

'Networks', argues Barabasi, 'are present everywhere. All we need is an eye for them' (Barabasi, 2003: 7). But, like beauty, the nature of a network, and what constitutes it, is in the eye of the beholder. In recent years there has been an upsurge of interest in understanding the properties and nature of networks. The authors Hardt and Negri in their analysis of the modern cultural condition have even argued that networks are a key isomorphism of the modern era. Just as, in Foucault's terms, we can regard nineteenth-century social forms as organised around and dominated by the image of the prison, so the image of the network has come to be the key image of modern sociality. 'Today', they argue, 'we see networks everywhere we look – military organizations, social movements, business formations, migration patterns, communications systems, physiological structures, linguistic relations, neural transmitters, and even personal relationships. It is not that networks were not around before or that the structure of the brain has changed. It is that the network has become a common form that tends to define our ways of understanding the world and acting in it' (Hardt and Negri, 2004: 142).

In this chapter, I'm going to look at the question of *why* networks have come to be a common way of defining our world. In part I relate this to the rise of ways of thinking and acting derived from our experiences with today's electronic media. Communication technologies are both a metaphor for and the concrete embodiment of the processes which have led us to a society which we characterise in terms of networks. However, the idea of a network which we derive from communication

technologies such as the Internet is a particular variety of the network form and one which, I will be arguing below, causes us to think of 'real space' networks in ways that are sociologically unhelpful and which fail to draw upon richer and better established traditions for looking at network formations. I argue that the widespread overwriting of the image of the social network with that of the electronic network is a conceptual reduction which produces a blindness to inequality and diminishes the social to a flat plane. Moreover, the attenuated forms of sociality which this model presupposes are sociologically improbable, depending as they do on the idea that all social relationships are more or less instrumental and voluntaristic, and misleading, sidestepping the traditional sociological focus on society, social order and solidarity.

Networks and the cultural imaginary

One of the reasons why the network form has become established as a key isomorphism of modernity is that networks themselves have become a key cultural battleground. On the one hand, in commercial discourse, networks are very much a 'hurray' word in Whyte's (2003) sense, a word which is intended to elicit approbation regardless of context. Social networks, made more visible by new media technologies such as Web 2.0, have been regarded by marketers and those in the cultural industries with envious eyes. Sites whose main purpose is social networking and connection (e.g., Facebook, MySpace, Linkedin) have been at the forefront of the 'new capitalism's' attempts to recreate social life as a commercialised space, and social interaction as the new 'media' which, as with all prior media, can and must be made into a carrier of commercial signifiers.

In civic discourse, by contrast, networks have become highly *politicised* social formations. Thus as Darin Barney (2004) has noted, networks, when they are seen, as in theories of the Network Society, to be the dominant form of social order become not merely an isomorphism but a form of ideology. For Barney the network image:

> in purporting simply to describe a set of contemporary social dynamics, provides a script that sets out roles, norms, expectations and terms of dialogue. Thinking through the model of the network – nodes, ties, flows – certainly helps us to understand a great deal about, for example, the restructuring of capitalist enterprise and work, the disaggregation of state sovereignty, the rise and operation of new social movements, and emerging practices of community formation.

> But when an idea such as this is elevated from heuristic device to the status of an all-encompassing social and historical fact, its function shifts significantly.
>
> (Barney, 2004: 179–80)

For other theorists, the invocation of networks acts as a means of obscuring the operation of power. Thus, for example, Witheford (1994) has noted that the collapse of traditional hierarchies in workplaces and the rise of distributed forms of production, flexible working and so on also turn networks of interrelationships, interactions and mutual associations between people into potentially fraught sites of contestation around personal space, the nature of the publicness and privacy and the division between working time and personal time. In large measure as a result of this, it can be argued, forms of communication become a site of contestation as it is they, rather than social norms or institutional practices that are the new, and formalised, conduits of power and discipline. However, in the process, forms of resistance have no stable adversary or locus of opposition, but rather face onto a multi-headed hydra composed of their own social and institutional connections.

Sociology has long taken seriously the idea that representations of social phenomena can precede and have a central role in constituting them. Of course, this has been mainly tied to an attempt to eradicate them as an analytical ill which jeopardises a proper objective analysis. Thus, for Durkheim, for example, what he terms prenotions are 'a veil interposed between the things and ourselves, concealing them from us . . . *idola* which, resembling ghost-like creatures distort the true appearance of things, but which we nevertheless mistake for the things themselves' (Durkheim, reproduced in Bourdieu, 1991: 94). For Bourdieu also, metaphors, in their guise as part of that which he terms the preconstructed, act to channel our thoughts into received patterns and direct them to appropriate responses. As such they are a unique carrier of ideology forming part of the 'common sense' of the age.

Moreover, as John Durham Peters has noted, metaphors derived from communication are particularly potent in this regard. 'Communication' is the central arena in which modernity comes to confront its own nature. 'Communication', he argues:

> is one of the characteristic concepts of the twentieth century. It has become central to reflections on democracy, love, and our changing times. Some of the chief dilemmas of our age, both public and personal, turn on communication or communication gone

> sour . . . 'Communication' is a registry of modern longings . . . . Only moderns could be faced with each other and be worried about 'communicating' as of they were thousands of miles apart. 'Communication' is a rich tangle of intellectual and cultural strands that encodes our time's confrontation with itself.
>
> (Peters, 1999: 1–2)

This is especially true in the case of the Internet, for as a medium, it is regarded not only as a metaphor for modern life but further also as constitutive of it. This may seem a bold claim; however, it is appropriate on a number of levels. In the first instance there is the, well documented, prevalence of the Internet in popular discourse. The literature is too rich to allow or require elaboration here, but for our purposes it is sufficient to note that the internet enjoys a uniquely high status in popular discourse, having come to be a virtual synonym for all that is modish and high tech. In part, these representations derive from the fact that the Internet is emblematic of the wider economic milieu. Just as television once epitomised and enshrined the values and consumer practices of a mass society, so the Internet can well be understood as the 'central nervous system of modern capitalism' in Gilder's (2002) terms. As Terranova has argued:

> the internet . . . (is) . . . not simply a specific medium but a kind of active implementation of a design technique able to deal with the openness of systems. The design of the Internet prefigured the constitution of a neo- imperial electronic space, whose main feature is an openness which is also a constitutive tendency to *expansion*.
>
> (Terranova, 2004: 3)

Thus, the Internet stands in an allegorical relationship to late capitalism, it symbolises its inherent logics of flexible production, circulation of symbolic goods, the expansion and incorporation of difference.

The Internet is also primary in another sense, in that it is reflective and constitutive of the activities and preferences of the cultural elite, a media savvy and technologically astute class whose social power derives from their dominance of the cultural industries and ability to leverage symbolic power (see Savage, 2000). Thus, for example, Andreas Wittel (2001), in arguing for the emergence of a new form of sociality, emphasises the role of the cultural elite as its instigators and promulgators. Network sociality is characterised by Wittel as consisting in ephemeral but intense interactions, based around the exchange of information.

Relationships characteristically blend work and non-work scenarios together; are contextual and individualised, disembedded from historically authorised social forms and intensely mediated by technological forms. Wittel describes network sociality as a model of social behaviour and engagement which is most commonly found and is characteristic of life in the cultural industries and especially new media industries. Although he acknowledges that this group is not representative, he makes the case for network sociality as an emergent mode of interaction. '(N)etwork sociality', he argues, 'will become the paradigmatic social form of late capitalism and the new cultural economy' (Wittel, 2001: 71).

Thus the central status of the Internet, not merely in popular and consumer discourse but as the flagship medium of the new economy and its chief architects and beneficiaries, makes it a uniquely accessible model to reach for when thinking about networks. However, to the extent that the Internet forms a 'common sense' of networks, it is, as I will be arguing below, one which itself takes on a partial and an ideological character.

Networks and the academy

The high profile that the network image has in populist discourse is matched by its profile within the academy. In part this can be related to the current fashionability of the new social physics and especially the work associated with writers such as Barabasi (2003) and Watts (2004) whose backgrounds as physicists have informed their sociological approaches to networks (Urry, 2004; Crossley, 2005). This however is reflective of a wider interest in and enthusiasm for understanding complexities and the mathematical properties of social life which is prevalent at this time and which is itself an outgrowth of a nascent though widespread substitution of rationalist approaches to social life with greater recognition of its chaotic and irrational forms. However, the modishness of the new social physics should not blind us to the fact that scholarship into networks has an extensive history, existing in multiple disciplinary contexts. From mathematics, through physics, statistics, anthropology, sociology and cultural studies there are well-developed problematics for looking at networks.

In sociology, there are many paths towards an interest in networks, as it is a logical outgrowth of several current trajectories of scholarship in the discipline. Crossley (2008a: 88), for example, relates the rise of network analysis to the prominence of social capital as a problematic in

sociology. For John Urry, by contrast, interest in networks arises out of dissatisfaction with the entrenched and outdated categories that sociology was required to work with. Drawing on Castells, Urry (2003) argues that an interest in networks and 'complexity' is a response to the dissolution of formerly bounded social, economic or political entities such as the nation, the firm or the state. It is interesting to note, as detailed below, that the early impetus behind the development of anthropological approaches to network analysis was precisely the same set of concerns, namely a sense of their being a profound mismatch between actually existing communities and practices and the larger scale entities used to stand for them in social scientific analysis.

However, as Crossley (2005; 2008a) has noted, the wide range of approaches to networks has not made for conceptual clarity and indeed 'networks' have been used in recent scholarship in a piecemeal and inconsistent way. Difficulties in formulating a consistent usage of the idea of a network have been attributed by some commentators to the looseness of the concept. Watts, for example, has argued precisely this point, emphasising the 'sheer generality' of the term as a reason for conceptual slippages (Watts, 2004: 27). However, it is equally reasonable to argue that this conceptual confusion of tongues is a function of the fact that, although a variety of disciplines and approaches within disciplines each have a well-developed and consistent way of operationalising the concept, these tend to be mutually exclusive. Thus, in sociology there are at least three distinct approaches to networks: the anthropological approach (itself divisible into the British and American approaches (Wellman, 1988)), which views networks as manifestations of, and means of constituting, social structure; the new social physics (see above) in which networks and groups are understood as the effects of mathematical properties on social action; and the approach associated with Actor Network Theory (ANT), in which networks themselves are dissolved into processes, groups into group formation (see Latour, 2005). This is without the addition of perspectives from cultural studies (for example, Deleuze and Hardt and Negri) or the complexity implied by the multiple different interpretations of these broad churches. Thus, in sociology alone the notion of networks is far from a simple one to apply. The picture becomes even more complex when a variety of approaches from other disciplines are brought into the frame.

What does it mean to see society as a network?

That there are such a variety of approaches to network analysis makes generalisation about its implications rather difficult. However, there are

some broad points of common reference which can be isolated. I will be considering these below in relation to, firstly, the nature of the subject in network analysis; secondly, the question of how meanings are developed within networks and finally the nature of network structures and the movement from ontology to process within modern sociological approaches to networks. However, the first question to deal with is what status we should accord to network analysis, whether as a method or a theory, for it is on this question that many of the central philosophical propositions of the approach hinge.

It is reasonable to understand network approaches as merely a method. Certainly the anthropologists who pioneered network analysis of social groups, for example, Seigfried Nadel and J. Clyde Mitchell understood networks as a method of enquiry rather than a set of theoretical propositions. In a sense, as Scott (1991) has argued, network or relational analysis occupies a similar, though radically uncomplimentary, position to variable analysis, insofar as it is a coherent way to approach the task of analysing society. The task of producing a network analysis rests on establishing the relationship between properties and the indices of those properties, in the same respect as variable analysis does. This is best illustrated by the way of an example. If, as in classical variable-based studies, we are interested in understanding, say, the prevalence of racism, and we chose to use membership of far right political organisations as an index that the member possesses racist attitudes, then our analysis will be valid only to the extent that we have chosen a fair index so that membership of the organisation does indeed 'mean' what we take it to mean and not that the member had other motivations (mistaking the British National Party (B.N.P.) for the National Trust, for example, or joining in order to participate in community social activities rather than espousing the political goals of the group). Our analysis also depends on establishing that the index we *have* used is the most reasonable one we *could* use. Similar points can certainly be made concerning network analysis. If we are using, for example, frequency of exchange of interactions as a measure of the existence or strength of a link between two parties, we need to equally establish that this is valid. Validity can be established only through an assessment of the social valuation and status of the form that the exchange takes. Thus, to take an example, looking at the number of exchanges of letters between individuals may be a valid index for closeness of ties in eighteenth-century elite society; however, it would certainly not be for the second half of the twentieth century. This is a function of the changing meaning attached to the communicative conduit of letters, shifting from an everyday form of communication to one either coded as impersonal and

business related or as intimate, but with little in between, along with the decline of letter writing as a practice, itself related to widespread structural changes.

Moreover, unlike variable analysis, the indices which relational analyses use are not merely unproblematic signs from which larger constructs may be read off. Rather they are themselves constitutive of the phenomena we are looking for study. So to take the example of racism, whereas a variable analysis might use membership of the B.N.P. as an index of racism, a relational analysis would see 'racist attitudes' as something emerging from membership, from occupation of a position in a network which generates these norms. In this respect, network analyses rest on the principle that norms and values emerge from location (see Wellman, 1988: 33). Moreover, a specific form of location is implied. Location is not, as in, for example, class position, one determined by factors outside of networks, but by occupation of a particular position within a pattern of connections. From this, two things follow. In the first instance, network analyses are more concerned with the manner in which interactions and connections are patterned, a point I'll come back to below. In the second instance, network analyses are concerned with the assertion that the identity, form or nature of the actor, as a node, or the link, as a connection, are not pregiven entities but are fluid forms which emerge from interactions.

That the identity of the actor in network approaches is understood as determined by the overall shape and configuration of the network as a whole is central. It is not the case that, as with models of Internet networks, networks merely serve to link up already preformed nodes. Rather the particular nature of the nodes emerges from the overall pattern. This is best illustrated by its most unequivocal iteration, in ANT. This approach sees the subject entirely removed from view in favour of the network. Thus:

> All phenomena are the effect or the product of heterogeneous networks. But in practice we do not cope with endless network ramification. Indeed much of the time we are not in a position to detect network complexities. So what is happening? The answer is that if a network acts as a single block, then it disappears to be replaced by the action itself and the seemingly simple author of that action.
>
> (Law, 1992: 5)

Networks, in ANT, when they are 'punctualised' or established, overwrite the identity of the individual nodes or parts, locking them into a specific

role in the network. This process, termed *interressment,* is well explained by Callon:

> Each entity enlisted by the problematization (the original definition of the situation) can submit to being integrated into the initial plan, or inversely, refuse the transaction by defining its identity, its goals, projects, orientations, motivations, or interests in another manner . . . . Interressment is the group of actions by which an entity attempts to impose and stabilize the identity of the other actors.
>
> (Callon, 1986: 207–8)

In ANT, we can see the central logic of networks that the nature of the elements from which they are comprised are created along with the network itself.

Emerging from this, then, just as network approaches have a distinct view of the nature of the agent and agency, they also have a view of the nature of structure. Monge and Contractor (2003), for example, draw a clear distinction in their work on organisations between the positional tradition of social structure and the relational. In positional structural approaches, which they see as characterised by the work of Parsons and also Weber, location within an organisation subsumes the actor to the extent that there is no distinction between the actor and the role. The relational tradition, however, looks to the interaction between the actor and their structural location. Structures are seen as something that is 'done', through communication and interaction, rather than something from which the nature of the actor can be read off. As Crossley argues:

> This poses a challenge to 'substantialist' definitions of structure as a 'thing' 'above the heads' of its members, bearing down upon them and determining their dispositions and actions. Agents are not 'dissolved' or reduced to 'bearers' of structure. Structure is conceived in relational terms as a pattern of connections and, insofar as this is a pattern of connections between human agents (it might equally be between organisations, web sites, nation states etc.) they remain active elements within it: inter-actors. Of course agents are affected by their relationships/interactions and the overall shape of the network is consequential for them, but the presence of structure does not delete agency. Structure is between agents rather than above them. It connects them rather than replacing them.
>
> (2005: 355)

A good example of the issues raised by this approach is provided by the often-cited question of structural 'holes' and brokers. In many networks 'holes' or gaps in the web of connections can appear, and where they do they have been seen to provide opportunities for agents to 'broker' or control links between others. This, as Burt (cited Monge and Contractor, 2003: 144) has outlined, has commonly been seen as a source of power and influence within a network, allowing a given actor to strongly influence those whom he/she connects and to further effect the development of the network as a whole. The position of a broker provides multiple potential benefits, including access to information, ability to filter information given to others, getting competitive advantages through timely information and accruing a perceived centrality which itself brings referrals – people seeking that broker in order to work together for common goals. This can be a powerful position, though as Crossley (2008b) notes, this is not always the case, with brokers potentially unable to act due to conflicting demands and the need to propitiate multiple irreconciled parties. The key point for our purposes, however, is that 'brokers' are structurally determined 'places' in the network, created by its overall shape, but their existence then impacts upon the further development of that network. The distribution of power within a network, then, as well as whether the individual node is able to convert that potential into actual power, can then be considered as an outcome of the overall shape of the network.

Seeing structure as something which is enacted, at a given time, is a subtly different reading of structure to that more commonly operationalised in the social sciences today. Structure here is seen, in Radcliffe Brown's words, as 'the set of actually existing relations, at a given moment of time, which link together certain human beings'(Radcliffe-Brown, 1940/1977: 224). For Radcliffe-Brown, the problem of analysing societies was understanding what to use as a unit of analysis. The central difficulty was that of defining what is meant by large-scale entities such as 'society', whether, for example, a society can be seen as identical to another entity, for example, the nation state, or whether a smaller unit of analysis is required. The changing status of the nation state in the mid-twentieth century and the incipient disintegration of previously taken-for-granted categories of communality stimulated the development of new approaches. For Nadel (1957), analysing social networks was a way to deal with these changing conditions empirically. Rather than attempting to derive a theoretical or general set of propositions which allow us to define society in given terms, investigating who is

linked to whom, and the overall patterns of linkage that exist, allow empirical determination of the extent and nature of the social.

As a method, then, network analysis seeks to empirically determine the forms of the social. However, understanding the social as something enacted has three corollaries. In the first instance it means that the nature of the network, its nodes and links, is formed by the network itself and is not prior to it. In the second, as recent theorists have argued, it sets an agenda for looking at networks not, in the anthropological sense, as something that exists but as something that is created and recreated by its constituent parts. This in turn highlights the significance of the processes by which relations are established and maintained, which is a change of emphasis from ontology to process, from the investigation of the extant to the examination of activity. In the third instance, it points to the fact that networks, as a sociological construct, do not have an 'outside'. There is not a further layer of meaning which accompanies the network; rather all meanings emerge from within it.

The Internet as a network

Earlier in this chapter, I pointed to the widespread appropriation of electronic communications as a dominant metaphor for thinking about networks more generally. However, in contrast to sociological constructions of networks, electronic networks operate according to the very different logics and principles. These will be considered below in relation to two issues. Firstly, the logics which shape the network itself, which, in the case of the Internet, can be understood to be both driven by an irreconcilability of elements and to be externally derived. Secondly, the logics of connection *within* the network are widely divergent, being both characteristically voluntary and individuated.

In the first instance, real space and electronic networks fundamentally diverge in terms of the underlying logics which shape them. As Terranova (2004) explains, the founding rationale of Internet development has been the reconciliation of heterogeneity through the introduction of translation protocols. The Internet as a medium develops out of the need to bring together diverse elements which must work together, but whose individual properties are unchanged by their co-location in a network. Thus, she explains:

> new protocols are usually inserted between systems or added to them, as an ulterior layer, without asking the current system to discard its

> old components and substitute them immediately with new ones. If an incompatibility emerges it produces a 'trigger for change' requiring new technical and social negotiations. Generally, however, a new protocol or level is introduced that, by operating between or on top of different layers, will allow them all to coexist under a single common framework . . . Incompatibility, understood as tension between divergent moments, is not relinquished but brought into the network through a process of horizontal addition and/or vertical subsumption.
>
> (Terranova, 2004: 59)

The problem in reading this network as a metaphor and applying it to social life is therefore twofold. In the first instance, real space networks cannot be understood in terms of translation protocols. We don't have another society which we use to bind the layers of our existing society together. Understanding social forms as relational means understanding that there is no outside, no other source of meaning or co-ordination to which we can appeal.

The Internet, however, *is* shaped in this way, firstly through these external protocols and secondly through the discursive and cultural contexts in which it is taken up. Thus, for example, the shape of the Internet has been formed by commercial constraints. The original 'vision' of the Internet as a distributed network quickly fell prey to the concerns of existing communications giant AT&T that a new media should not be developed which would challenge their monopoly status (Barabasi, 2003: 144). Whilst the original conception of an Internet would have seen it as a distributed one, in which all nodes link to each other, however long a path or number of links, the reality of the Internet today is a more 'directed' one, in which only some pathways of connection are available, and many paths only allow access in one direction. Thus, Barabasi describes the relationships between what he terms the central core of the Internet and, using concepts from graph theory, the in and out regions. The in region has links to the core, the out region has links from the core, but neither has links travelling in both directions. So, for example, if I included a link to a core site, perhaps aljazeera.net or cnn.com, on my blog, I would create a link into the core, but it is unlikely, sadly, that CNN would feel a need to reciprocate. Thus, there is an inherent directedness in the flow of information which is an outcome of the way in which the Internet recapitulates prior relations of power. This is of course an ongoing shaping. The rapid commercialisation of the Internet during the late 1990s and early part of the twenty-first century

has created a fragmented set of 'webs', in which specialisation of interest, in combination with greater efforts to generate revenue and protect intellectual property on the part of information suppliers, has led to an increase in password protected and otherwise proprietary nodes. Thus, the shape of the Internet as a network is profoundly moulded by commercial forces in the West. Of course, commercialism is not the only shaping force at work. Considered on an international stage, political concerns and censorship often have a greater role in determining the form of the Internet as a network, leading to entirely different configurations. Thus, the shape of the Internet *qua* network is not an emergent property of its links, as social networks are. Rather we have to look to factors outside of the network in understanding how it comes to be the shape it is in. The implication of this is that, whereas social network analysis promises a way to look at the structure without positing an entity that exists 'over people's heads' and which exists prior to their actions, the Internet can't be seen in that way. In this sense, it is a misleading model for understanding networks more generally.

The second key difference that Terranova's account flags up is the assumption that heterogeneous elements will retain their own identity when uncoupled from that network. Terranova argues that the ongoing tension between the parts is the 'culture' from which the Internet grows, links and protocols reconciling and translating between disparate and non-compatible features. Considered in this way, then, the Internet is nothing more than those translation protocols and links, a technical infrastructure which sidesteps resolution of incompatibilities. However, 'real space' networks are not like that. In the first instance, resolution of incompatibility cannot be eternally deferred if we are to refer to a social form as a society. Social orders have some internally developed and monitored means of achieving a consensus, even if that consensus is merely a delimitation of the areas in which difference and non-conformity can be accepted, and this consensus cannot depend solely on intermediaries. In the second instance, as discussed above, networks of human actors are only a reasonable unit of analysis if we proceed from the premise that identity and/or behaviours are a product of that network. Positional structural analysis presupposes that the social is not merely a set of conduits but also imposes a set of expectations and constraints on the occupant of a position. The network architecture of electronic networks, as I have argued elsewhere (Cavanagh, 2007), is assumed to have too great a degree of voluntarism to be comparable to the social processes which form and maintain social networks.

Thus, Internet networks differ from social networks insofar as they are not understood as constraining. The common image of networks which derive from the model of the Internet is of a multiplicity of alternative links, multiple routes and multiple interchangeable nodes. Internet networks are conceived in terms of the ideology of the Internet as an open space in which any link is possible. Of course, whilst this is not true of the Internet in real life, it is certainly no more true of real space networks, where a link or connection, in order to be considered as such, must operate some degree of influence on action, whether through the production of values and norms or through facilitating *and/or restricting* our opportunities to gain information, resources, or for action.

Finally, just as in the model of Internet networks any link is possible, so also *every* link is *in theory* possible. Internet networks differ in the sense that they represent a static network, one in which the network is achieved by the fact of connection, rather than any activities or behaviours implied by that connection. We can see that the logic of this is played out in its starkest form in social networking sites online, for example, Myspace or Facebook, where social relationships are 'displayed' rather than enacted. The essential logic of social networking sites is curatorial, the maintenance and display of a bounded catalogue of connections and links. Such links are only maintained, if maintained at all, through low 'cost' interactions, low involvement socialising and exchanges. They exist because this is the way in which the technology allows sociality to be performed, and not because any particular value is attached to them or any expectations arise from them. These links can at best be described as weak ties, ties which are on a par with acquaintances. However, as Haythornthwaite (2002) has noted, the Internet's ability to support an abundance of weak ties says nothing about the possibility of activating weak or latent ties into ongoing relationships. Thus, Internet networks, unlike social networks, are not theoretically bounded, either by cultural patterning, as with kinship networks, for example, or even through the simple mathematics which govern how many ties we can support in real life.

So, to sum up, that there is a tendency to see Internet networks as an exemplar of networks more generally has a number of consequences. In the first instance, it reduces the differentiated richness of social life, a social life comprised of multiple contradictory links, some of which are rather more determining than others, to a flat plane, where connection and involvement are reduced to 'reachability'. This disregards the multiple ways in which power circulates within a network, and the multiple network forms – cliques, bridges, brokers, isolates and so on –

which direct that power. In the second instance, it presumes precisely what a network analysis might be supposed to investigate, namely the shape and pattern of the social. To understand the social as a network *like an Internet network* presumes a high degree of voluntarism of connection and social individuation. What this downplays is the determining nature of social structures, conceived in positional terms.

In this sense, seeing the social as an Internet network is a form of multistable perception, where one's interpretation shifts depending on what part of the image is defined as the background, and what part is defined as the subject. Thus, on the one hand, it is possible to view the 'Internet network' social as embodying freedom from totalising identities and structures. The personal network implied here is that described by Wittel (2001), one in which relationships are fleeting, intense and activated by the needs of a 'project' or a social goal. This view of a network emphasises the facilitatory nature of networks, the sense in which being connected acts as a catalyst for action. Membership provides resources, albeit through the reduction of the individual to their attributes in a given scenario. In this sense, the social is enabling rather than constraining, and social life is seen to offer opportunities rather than the mutual obligations which are at the heart of social solidarity. Viewed another way, however, tracing a web of connections, where such connections are seen as a flat plane, risks entirely occluding that which is not connected to, or reachable by, the network. A good sociological analysis of a network must take it as axiomatic that links are selected, by the actor, or otherwise, from a range of possible links. What is *not* selected can therefore be as determining of the shape of the network as what *is* selected since connections always involve both orientation to and orientation against a particular node.

As we have seen in the above discussion, there are fundamental differences between sociological views of networks and the socio-technical networks concretely realised in the architecture of the Internet. What I have argued here is that the mediation of the metaphor of the 'Internet network' may deform the ways in which we think of the social, solidifying and rationalising a focus on the sociology of the connected and risks losing sight of the disconnected altogether.

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12
Afterword: Mediating the Digital

Nick Prior and Kate Orton-Johnson

This pair of essays combines effectively to constitute an invitation and a corrective, but they also pose a set of provoking questions. They invite the reader to ponder if and how technological innovations congeal around contemporary mediated practices in ways which recast our understandings of social and cultural relations. Here, both war reporting and social networks require a distinct sociological treatment, but one which treads delicately between the Scylla of modishness (the uncritical waving of the web 2.0 banner, for instance) and the Charybdis of absolute stasis, where little has changed. In this sense, they show why it is important to resist imprecise characterisations of digital mediations which replace fine-grained examinations of situated material practices with flabby sloganeering. That they do so whilst insisting on the importance of framing concepts reinforces the necessity of a theoretically attuned sociology of the digital that never loses sight of local relations. To bring together networks, mediations and communications is, after all, to associate three complex and multi-layered terms that have abstract qualities as well as evoking palpable, concrete, material worlds.

In this sense, the two chapters share a desire to investigate the specific properties of the sites and domains under question. In Allan and Matheson's case, the authors are careful to describe the uneven ways that digital technologies mediate war in order to avoid collapsing the messy practices of journalism into a single theoretical overture. Here, the corrective is not just to Baudrillard's dictum that all is simulation and simulacra but to those analyses that assume that contemporary media adhere to a vector of efficiency or speed (Virilio, 1997). If 'newer' digital technologies and networks *do* mediate in qualitatively different ways to 'older' media, then the point is to demonstrate how this happens in the everyday practices of journalists, in news gathering techniques

and engagements with digital devices such as laptops, satellite links and portable TV stations. It is equally an orientation to show, rather than tell, how reporting is caught up in pragmatic constraints that include deadlines, editorial decisions and, we might add, technological malfunctions that undermine the putative efficiency of these very devices. In other words, from the view of hyper-mobile technical infrastructures, it all looks dizzyingly fluid but from routine operations on the ground – what Allan and Matheson call 'lived materiality' (154) – these networks are always negotiated and constrained by real-world contingencies of both war and reporting.

To this, Cavanagh adds a timely warning about powerful representations of electronic networks as they associate with and overburden understandings of 'real world' social networks. Here, the problem is not that we lack academic tools to deal with networked communications as integral to the technical apparatus of modernity. In fact, as Cavanagh points out, the idea of the network has become a leitmotif of the modern era itself – a shorthand image for a range of phenomena, from global economic transactions to personal friendships. The very symbolic ubiquity of the network, however, is problematic in that a distinct, Internet-version of the network has come to stand for *all* network relations, including social and kinship networks. At stake, for Cavanagh, is nothing less than the recognition of different ontologies of connecting, associating and being across informational and social domains, where such ontologies are ordinarily conflated in two moves – firstly, by the constitutive power of the image of the network and by adherence to a flat ontology of the social associated with positions such as Actor Network Theory. For Cavanagh, if we start with the counter-recognition of the fissured and relational textures of the social, we find room for a fuller examination of social hierarchies and structural constraints that are operative within what she calls 'the differentiated richness of social life' (182).

But there are some outstanding issues to ponder, here, too. Both articles open up the question of whether sociology has a rich enough vocabulary to handle the meeting point of the social and the digital when it comes to understanding mediated networks. The classical core of sociology never had to develop a deep analysis of media and communications and so the discipline had to piggyback on and borrow concepts from newer disciplines like cultural studies and media studies – the establishment of the Centre for Contemporary Cultural Studies and the work of Marshall McLuhan being particularly influential here.

One might reasonably ask, in this context, what kinds of interdisciplinary configurations are best assembled to do justice to the complexity of digital cultural worlds, as well as what role sociology should play in this configuration. One option, already hinted at, is to position sociology as a kind of empirical watchdog against woolly philosophical posturing. Alternatively, one might imagine sociology providing a rejoinder to reductive, top–down readings of communications, such as Kittler's where 'media determine our situation' (Kittler, 1999: xxxix). Indeed, the rise of audience studies in the 1970s and 80s was partly driven by a sociological desire to understand end consumers of media as active participants in the meanings and effects of mass media, rather than to assume that such meanings began and ended with the texts themselves. But this constitutes a very partial version of what sociology brings to the table, with the attendant danger of it being reduced to a positivist conduit and little more.

Do we even require new sociologies to explain new media? Are we not back to older conceptualisations that draw on core sociological concerns around networks, power and the construction of knowledge? One might, indeed, see the advent of digital media as a disciplinary opportunity to return to established approaches to knowledge and representation that preoccupied groups like the Glasgow Media Group, or at least show how networks of power criss-cross digital worlds according to long-established patterns of control and articulations of resistance.

And then there is the basic question of what 'mediation' actually consists of. A return to understanding the materiality of media has necessitated an engagement with the complex milieu of media systems, including the production (in the broadest sense) of media texts in specific organisations and settings. Here, the concept of mediation has become one way to account for how humans and things translate one another. According to Hennion (1997), for instance, unlike the notion of an intermediary where a person or phase exists between object and audience, the notion of mediation acknowledges the latter as a process that actively changes that which it mediates, an 'event which disturbs what comes in and what goes out' (Hennion and Latour, 1993: 21). This gives the concept greater interpretive power and efficacy in that it bypasses the internalist idea of media as radically autonomous as well as the notion that media forms are inert reflections of society. Coupled with the concept of 'affordance', another borrowing but this time from Gibson's (1966) perceptual psychology, where things 'furnish' rather than determine events, sociologists of media have made some headway in understanding the two-way relations between social life and

communicative forms across the spectrum of media and popular culture (DeNora, 2000; Born, 2005).

But a concept as current as mediation still requires to be constantly finessed in confronting new domains and objects, and this is particularly the case in what we are tentatively calling the 'digital age', where a tension is posed between a traditional view of media as bounded sites for the production, distribution and consumption of products, and one that sees media environments as opportunities for participation, interaction and creativity. Here, the two chapters in this part articulate rather different versions of digital networks and technologies. On the one hand, Cavanagh's Internet is fundamentally moulded both by external commercial constraints and the 'activities and preferences of the cultural elite, a media savvy and technologically astute class whose social power derives from their dominance of the cultural industries' (172). Such a characterisation is, in part, a critique of the first-wave of cyber-utopian celebrations of the Internet as a pioneering and indeterminate space in which relations are de-hierarchised and identities proliferate unbounded. It is also to recognise persistent inequalities in digital literacy across heterogeneous global populations, reprising power differentials in socio-economic structures at large (van Dijk, this collection).

Allan and Matheson's Internet, on the other hand, is part of a new media ecology that is 'reconfiguring the geometry of communicative power' (163). Here, the authors identify the ways in which the proliferation of digital devices like camera phones and sites like YouTube and LiveLeak have afforded soldiers opportunities to upload their own relatively unmediated reportage and imagery of war. Not only does this represent a threat to authorised and sanitised accounts of war from the centres of power, where a 'politics of mediation' complicates orthodox military rhetorics (166) but it also potentially blurs boundaries between content providers and audiences in interesting ways. Again, while we are called here to older sociological concerns around power and the production of knowledge, we are also facing the problematisation of the very idea of a mass media based on older distinctions between producers and consumers.

Here, the model of mass dissemination, where media are tasked with presenting persistent messages to large, national audiences has been overtaken by a more complex, dynamic and participatory view of digital media technologies as a series of globalised links and nodes through which people nurture relationships, seek and provide advice and craft their own digital information and spaces. The rise of

so-called 'alternative', 'independent' or 'oppositional' news sites such as NowPublic, DigitalJournal and Indymedia has been largely dependent on the activities of amateurs and volunteers rather than professional reporters, editors and publishers. This increasingly de-centred web of information constitutes what some have termed the rise of 'citizen' or 'participatory' journalism, where user-generated content (from personal blogs and video footage to local news reports and contributory news sites) combine with so-called 'we media' to create a diffuse network of news without formal editorial moderation or filtering processes.

The advent of micro-blogging sites like Twitter has added a layer of immediacy to news-on-the-ground reporting and reinforced a more diffuse cycle of co-optation and engagement between the mainstream centres of information and their more interactive but increasingly influential peripheries. Whilst wildly exaggerated claims abound about the role of social media sites like Facebook and Twitter in the recent uprisings in the Middle East (as well as the 2011 London riots, where the Blackberry Messenger network was blamed for catalysing riotous behaviour), such platforms have clearly been influential in facilitating the actions of 'real-world' communities. Meanwhile, lines of tension continue to exist around the control of sensitive content and the freedom of information in digital contexts. The widely publicised case of Wikileaks – the website that allows anonymous users to expose often classified information on government activities – in many ways reprises debates around media pluralism and the ownership and control of media organisations. But it also raises interesting questions around the ethics of 'open-source' journalism and ongoing hegemonic struggles over information itself.

If new media and the uses of digital communication technologies *do* in some senses open up information to a less institutionally embedded model of production, then we still need to trace the precise scope and shape of these developments amongst a range of populations and users. New vocabularies around participatory users have cast these not as producers or consumers but as 'prosumers' – interactive and creative consumers who draw on and appropriate existing culture to play with or create hybrid forms (Ritzer and Jurgenson, 2010). Prosumers are said to be archetypal collaborators who aggregate in offline and online communities with democratising functions, and who are more likely to participate in the construction, rating and reviewing of cultural objects. From uploading eyewitness accounts and editing Wikipedia entries to co-producing open source software and starring in reality TV shows, practices of prosumption are claimed to be reshaping the basic structure

of contemporary mediascapes as well as the social theories needed to describe them. Yet, it remains unclear how useful this term is in capturing a new breed of digitally enabled active consumers or even a 'new paradigm' of the economy. More work still needs to be done in ascertaining exactly who these prosumers are, their modes of orientation as well as what, if anything, separates them from traditional fans and pre-web 2.0 communities (Orton-Johnson and Prior, 2011).

Another outstanding question revolves around the fate of 'old' media in digital systems of production – whether such media are made obsolete or assigned a different status in processes of innovation, adaptation and reinvention. The emphasis on the co-option or even re-purposing of cultural information suggests, after all, a kind of remediation of content. Indeed, the concept of remediation has become another recent addition to the conceptual toolkit of media scholars. According to Bolter and Grusin, remediation refers to the ways new media 'refashion older media and the ways in which older media refashion themselves to answer the challenge of new media' (Bolter and Grusin, 1999: 15). In other words, remediation is the constant interplay between media such that one media is represented in another – the uploading of images from magazines, for instance, or the digital archiving of books. Here, existing content is borrowed, spliced, sampled or remixed to create new relationships and new content.

From an historical point of view, there is little that is absolutely new about these creative adaptations. In many respects, they are the signature method of most *avant-garde* art movements. But Bolter and Grusin argue that digital tools have made remediation the hallmark of contemporary creative work in media culture by harnessing the adaptive features of participatory design software and digital content (re)creation. These types of remediated interventions are made all the more easy as the available technologies and media platforms activate and fold into one another – giving rise to another term, 'convergence culture' (Jenkins, 2006). For Jenkins, however, far from merely being a technological matter where, as with the 3G phone, multiple media functions are bought together, convergence happens within the adaptive practices of increasingly skilled navigators of media and, importantly, through their interactions with others. The shift to more self-organised clusters of creativity also suggests changing economic models of media, where monolithic industry structures are fragmenting into smaller, smarter and more agile industries.

Indeed, it is perhaps in the enduring need to associate with others that sociologists have most to say about changing forms of interaction

and communication; in the constant toing and froing of online and offline media. It is in the nature, scope and global reach of these interactions that the emergence of digital media demand powerful concepts and in-depth research as well as the recognition that many of the core sociological themes – community, identity, interaction, presentation – are already in place to be developed and sharpened up.

At the very least, these developments present opportunities to raise and revisit questions at the heart of the sociological imagination, as well as figure out what needs to be twisted or jettisoned in that exercise. We've moved a long way from the first-wave rhapsodies of the digital, with their exuberant formulations of a 'virtual' sphere radically discontinuous from the 'real'. Fantasies of complete disembodiment and sensory immersion have not materialised, nor has the vision of a smooth digital plane of infinite possibilities. But that's not to say that expressive forms of media culture have not undergone surprising shifts and witnessed the emergence of different forms of assembly, oppositional politics and alternative cultural formations. Indeed, if there is any sense at all in identifying a 'digital revolution paradigm' (Jenkins, 2006: 6) then it is surely most obvious in the changes that are afoot in how media industries, technologies, practices and consumers are being reconfigured.

And yet clearly a lot more work needs to be done in clearing the ground for a full and rigorous sociology of digital worlds and digital media. We still need to explore the banal ways that users engage with new and old media without losing sight of the connections to broader socio-economic contexts, including the rise of what Thrift calls a 'knowing capitalism' (Thrift, 2005) that is all too ready to co-opt and exploit user-generated content for its own profitable ends. We also need to make room for media transitions that are not predictable or that are contingent on the constant interplay not just of technological changes but the unintended consequences and creative imaginaries of ordinary users. It is in this context that these two chapters constitute a noble intervention in this ongoing enterprise, an enterprise that continues to have tangible sociological co-ordinates.

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Part V
Practices

13
Rethinking Education in the Digital Age

Neil Selwyn

Introduction

The educational use of technology has remained on the periphery of the sociological gaze for a number of wholly understandable reasons. In comparison to other areas of society, education offers a rather underwhelming case study of the technological. Sociologists wishing to gain rich insights into the dynamic nature of technology use in everyday life are best advised to look elsewhere. Conversely, the grand narratives that dominate sociological accounts of education touch rarely upon technology use. At a micro-level of analysis, sociologists of education continue to direct their attention towards unpacking enduring issues of inequality, resistance, identity and culture which pattern the processes and practices of 'doing education'. Macro-level studies, on the other hand, remain concentrated on issues of social mobility and the entrenched stratification of educational opportunities and outcomes (see Delamont, 2000). Whilst implicated in many of these issues, 'technology' has simply not merited any particular foregrounding within such accounts.[1] Yet whereas the 'new' information technologies of the 1980s and 1990s could be said in the hindsight to have been little more than tokenistic additions to educational settings, digital technologies now constitute an ever-increasing presence within the processes and practices of contemporary education. Thus, it is perhaps inevitable that the technological will assume a more prominent standing within the sociology of education as the twenty-first century progresses. As such, this chapter offers some thoughts on the place of digital technology within new sociological understandings of contemporary education.

The chapter first considers the prevailing notion that digital technologies are somehow refocusing educational processes and practices away from the dominant producer interests of institution, state and economy and towards a democratised 'personalisation' of education recast around the interests of the individual learner. Whilst highly contestable, these accounts of the 'new digital education' are fore-grounded in even the most considered of educational debates in most countries. The chapter therefore goes on to argue for sociology's role in providing informed responses to these often speculative and unsubstantiated accounts of education in the digital age. As the preceding chapters in this book remind us, it is foolhardy to approach the digital age as anything less than a site of intense social conflict. This chapter contends that it falls to sociology as a discipline of critical inquiry to promote more socially grounded understandings of the 'messy' realities of technology and education. Thus, rather than simply taking the ineffectual approach of asking whether or not technology 'works' in education, sociologists should be seeking to imbue discourses of digital education with questions of how digital technologies (re)produce social relations and in whose interests they serve (see Apple, 2004). With these thoughts in mind, the chapter concludes by suggesting some priorities for sociologists seeking to produce relevant and rigorous analyses of the ostensibly 'new' forms of education promised by the digital age.

Considering the promise of digital technology for the individual learner

As many of this book's contributors have discussed, the growing use of digital technologies in everyday life is believed popularly to accompany a reconfiguration of social action along more fluid and networked lines. Indeed, the use of digital technologies is seen to be a prerequisite to dealing successfully with the constant changes and risks of contemporary society (e.g. Lash, 2002; Bauman, 2005; Urry, 2007). Whilst encompassing most, if not all, areas of everyday life, this sense of change has assumed a particular prominence in discussions of the changing nature of contemporary education. Of course, this privileging of the technological is by no means a recent occurrence in educational discourse. Technologies such as computers and the Internet have long been portrayed by some educationalists as allowing learners to break free of the synchronous norms of classroom-based learning, and to facilitate boundless access to knowledge on an any-time, any-place,

any-pace basis (Suppes, 1965; Bennet and Bennet, 2008). The past three decades have seen arguments put forward, for example, that individuals can learn through the 'hard fun' of creating and playing in virtual worlds rather than being subjected to the 'teaching disabled' pedagogies of the conventional classroom (Negroponte, 1995; Shaffer, 2008). Computer scientists and 'learning technologists' continue to anticipate the technology-led 'blowing-up' of the conventional school (see Papert, 1984). In this respect, much faith continues to be vested in digital technologies as a catalyst for a substantial, if not total, re-engineering of industrial-age modes of teaching, learning and schooling.

Whilst knowingly polemic, these grand claims reflect a wider belief amongst education technologists in what can be termed as a 'digital remediation' of education (see Bolter and Grusin, 1999). In other words, the rather outlandish claims by the likes of Papert, Negroponte et al. are emblematic of more tempered assumptions within the education community that digital technologies (not least the Internet) are reconfiguring substantially the processes and practices of education. This is not to say that 'new' digital forms are believed to be usurping *all* practices and processes that have gone before, but rather that digital education is able to borrow from, refashion and often surpass earlier forms of education. Perhaps the most valorised accounts of this digital remediation concern the fast-changing nature of individual learner practices. Here, it is claimed that the individual learner is (re)positioned at the centre of a network of learning opportunities that they can engage with as and when they choose. These accounts are based upon a strong agenda of 'personalisation', which stresses the increased importance of the individual learner in shaping the learning experience, with the logic of education systems somehow 'reversed so that it is the system that conforms to the learners, rather than the learner to the system' (Green et al., 2006: 3). In this sense, the role of the individual learner shifts from receiving learning instruction in a passive manner to one of actively (re)constructing the place, pace, timing and nature of the learning event. As Nunes (2006: 131) concludes, contemporary forms of technology-enhanced education now . . .

> conflate access and control; transmission in other words is figured as a performative event in the hands of the student, thereby repositioning the student in relation to institutional networks. To this extent, the [digital learner] is anything but marginal; as both the operator that enacts the class and the target that receives course content,

> the student occupies a metaphorical and experiential centre for the performance of the course.

This notion of a technology-led personalisation and self-determination of education is expressed in a number of ways. One prominent contention is that the situational, institutional and dispositional barriers that previously prevented individuals from participating in learning are diminished through the application of technology. As the UK government department for education has reasoned:

> E-learning is a relatively new tool with the potential to *radically improve participation* and achievement rates in education. Benefits include; the ability to customise learning to the needs of an individual and the flexibility to allow the individual to learn at their own pace, in their own time and from a physical location that suits them best . . . Through e-learning we have the opportunity to provide *universal access* to high quality, relevant training and education.
>
> (DfES, 2002: 4 – emphasis added)

As this quotation illustrates, digital technologies offer a ready means to portray contemporary education as a less compromised form of learning than may previously have been the case. Through digital technology, learners are argued to enjoy increased levels of access to a diversity of learning opportunities, as well as freedom to choose the educational options that best fit their needs. Allied to notions of a 'death of distance' and 'time–space compression' that are seen to characterise late modernity, digital technologies are presented as having liberated learning from the many inhibiting 'frictions' of space and place. Technology is therefore said to allow learning to occur at times and in places that best suit the individual learner, unencumbered by familial, household or employment commitments. Similarly, in terms of pacing, digital technologies are seen to offer individuals the opinion of both a 'speed-up' and 'slow-down' of their learning as their needs dictate. All told, digital technologies are felt to have brought a much-needed loosening-up of boundaries to the learning process.

Underpinning these enthusiasms is a perception that digital technologies afford the individual learner increased access to 'informal learning' opportunities. This notion of informal learning is described most accurately as learning that takes place outside the aegis of the formal education system, including a range of (often unintentional) learning stimulated by general interests which is 'caught not taught' (Davies, 1998).

Digital technologies are seen as especially conducive to informal learning given the 'hyper-potential world of connectivity' associated commonly with the digital age (Nunes, 1997: 169). Here enhanced connectivities between people, places, products and services are seen to have facilitated new forms of communitarianism and, it follows, new opportunities for informal exchange of expertise, knowledge and folk-wisdom. Whilst networked computers have long facilitated 'incidental learning' and self-education, the trend for the informal creation and sharing of knowledge via digital technologies is seen to have increased of late through the burgeoning use of so-called 'social software' where users are connected to and collaborate with each other in a variety of group interactions. One of the central tenets of this so-called 'web 2.0' phase of Internet applications is the 'read/write' and 'many-to-many' nature of content production and consumption. Under these reconfigured conditions of authorship knowledge is no longer held by formal gatekeepers but can be created and accessed by all. As Leadbetter reasons:

> the web's extreme openness, its capacity to allow anyone to connect to virtually anyone else, generates untold possibilities for collaboration . . . the more connected we are, the richer we should be, because we should be able to connect with other people far and wide, to combine their ideas, talents and resources in ways that should expand everyone's property.
>
> (Leadbetter, 2008: 3)

In this manner, digital technologies are felt to be contributing to a number of shifts in the social processes of learning. In particular, strong links have been established between the use of digital technologies and 'socio-cultural' theories of learning that have emerged from the work of psychologists such as Lev Vygotsky to form the dominant view of learning in contemporary education. Socio-cultural theories of learning see 'active' and 'authentic' learning as most likely to take place within assemblages of people and objects where the construction of knowledge by learners can be nurtured and supported. As such, a valuable social dynamic of learning is seen to be implicit within the use of convivial social software technologies such as wikis, social networking, blogging and folksonomies. These technologies in particular are seen to offer a participatory learning experience based around the collaborative production and subsequent sharing of knowledge (Crook, 2008). In this sense, the collaborative spirit of contemporary digital practice has coalesced into a prevailing sense of learning now

increasingly taking place within informal networks of learners involved in the creation as well as consumption of content. As Beer and Burrows conclude:

> networks are taking shared responsibility for the construction of vast accumulations of knowledge about themselves, each other, and the world. These are dynamic matrices of information through which people observe others, expand the network, make new 'friends', edit and update content, blog, remix, post, respond, share files, exhibit, tag and so on. This has been described as an online 'participatory culture' where users are increasingly involved in *creating* web content as well as *consuming* it.
>
> (Beer and Burrows, 2007: 2.1)

Considering the realities of digital technology for the individual learner

As should be apparent from even these brief examples, the digital remediation of education implies a substantial recasting of the educational landscape around the individual. Indeed, more excitable commentators have been prompted to celebrate the capacity of digital technologies 'to radically change the educational system . . . . . to better motivate students as engaged learners rather than learners who are primarily passive observers of the educational process' (Ziegler, 2007: 69). Of course, these grand claims are somewhat contradicted by the rather unreconstructed nature of contemporary education to date. Whilst recent years have certainly seen substantial increases in the physical presence of digital technology in educational settings, the much promised technology-led 'transformation' of education systems has nevertheless failed to materialise. Whilst digital technologies and other personalised technologies may well have undoubted potential to support learning and learners, it seems that this potential is being realised only on occasion. As Laurillard (2008: 1) was led to conclude, 'education is on the brink of being transformed through learning technologies; however, it has been on that brink for some decades now'.

In this sense, any claims for a digital remediation of education require close scrutiny. When we turn to empirical evidence – rather than expectation or received wisdom – then it would appear that many of the claims outlined above lack substance. There is little evidence, for instance, of digital technologies disrupting existing patterns of participation in learning. Studies of adult populations, for example, suggest that patterns of non-participation in education are not being changed

significantly by access to digital technologies (see Selwyn et al., 2005). Barriers and impediments to learning – such as the afore-mentioned 'frictions' of time, space, place and material resourcing – are found to persist despite the affordances of technology, and on occasion be reinforced by technology use. Moreover, digital technologies appear to do little to address lack of individual interest or motivation in engaging with education. Thus, whilst some digital technologies may be used to overcome physical and cognitive impediments such as disability or literacy, technologies on their own often do little to alter the social complexities of people's lives. Many non-technological and often hugely complex issues such as poverty, housing, quality of employment and the generational reproduction of inequalities underpin non-engagement in education. It is somewhat ambitious to argue seriously for a digital reconfiguration of such issues.

Similarly, there is little evidence of digital technologies leading to an increased diversification of learning opportunities. If anything, technologies such as the Internet can be associated with a distinct entrenchment of existing provider interests. For instance, the provision of online learning and training remains centred around established educational providers offering tuition in profitable subject areas such as business, IT training and language skills. Where diversification can be said to have occurred, this concerns digital technologies supporting the increased involvement of commercial actors in the provision and governance of the education 'marketplace' for 'e-learning' and home-based 'edutainment' products (Buckingham and Scanlon, 2005). Perhaps the most noteworthy change here is the growing commercial mass provision of online education by what Hinchey (2008) terms 'media-giant producers' such as Pearson, Mattel and Disney, rather than a 'long tail' provision of more specialised and esoteric forms of learning (Anderson, 2006).

This trend for entrenchment rather than expansion of existing practice is also apparent in the realities of digital technology use within educational institutions. Belying the potential for collaborative knowledge-building, uses of new technologies in schools, colleges and universities remain dominated by the 'cut-and-pasting' of online material into word processing documents and slideshow presentations, as well as the bounded management of learners' activities through 'virtual learning environments' (Crook and Harrison, 2008; Nicholas et al., 2008). Even within ostensibly 'high-tech' provision of learning, the practical significance of digital technology can be limited. For instance, Orton-Johnson's (2007) auto-ethnography of web-based distance-learning showed that online communicative and communal

activities are often, in effect, only 'secondary activities' which contribute little to the 'real' practices of academic study which remain 'grounded in traditional offline activities; reading, note taking and the production of assessed work' (Orton-Johnson, 2007, para 11.2). For all but a minority of individuals, the use of technology for formal or informal education appears to be rather less expansive and empowering than the rhetoric of digital education would lead us to believe.

It has been contended that digital technology has been employed in education institutions mainly in support of the operational and administrative concerns of education institutions (see Bottery, 2004). From this perspective, the use of digital technologies with education institutions may often be shaped by 'new managerial' concerns of efficiency, modernisation, rationalisation and reduction of spending costs, rather than concerns of learning and the individual learner. This reflects long-running unease amongst some commentators with regards to the contribution of computerised technology to depersonalised forms of education, and an overall 'factory model' of education provision which runs the risk of atrophying learning opportunities while dehumanising and deskilling both educators and learners (Cooley, 1999; Apple, 1994). As Rudy Hirschheim (2005: 101) concluded in relation to university education, it could be that digital technologies such as the Internet lead only to a 'more standardised, minimalist product targeted for a mass market, this will further 'box in' and 'dumb down' education, resulting in a system that does not support the endeavours of superior scholars and thinkers'.

Indeed, although evidence is scant either way, the visions of technology-enhanced collaborative learning outlined earlier have been countered by numerous predictions of the intellectual and scholarly de-powering of a 'Google generation' of students incapable of independent critical thought (e.g. Brabazon, 2007; Fearn, 2008). Here it is argued that technology-based educational provision is in fact most suited to a rather constrained one-way transmission of information. Even current uses of social software technologies by learners can be described most accurately as involving the passive consumption of information rather than the socially situated authentic learning outlined earlier. A good example of this constrained use would be a learner simply reproducing information from an entry in the online Wikipedia encyclopaedia, as opposed to participating in the collective construction and editing of that Wikipedia entry. Such passive engagement with digital technologies leads, at best, to what Crook (2008) terms a 'low bandwidth exchange' of information and knowledge, with any illusion

of 'collaborative' learning described more accurately as co-operation or co-ordination between individuals. From this perspective concerns persist amongst more sceptical commentators that an over-reliance on digital technology in the learning process can 'only produce competence, whilst expertise and practical wisdom will remain completely out of reach' (Dreyfus, 2001: 49).

Recognising the (dis)continuities of education in the digital age

All of these latter arguments portray education in the digital age as cause for concern rather than cause for celebration. It could be reasoned that introducing a degree of negativity into discussions of technology and education provides a much-needed balance to the debate. Indeed, if full account is to be taken of the changing nature of education in the digital age then more attention needs to be paid to the problematic nature of digital technology and learning. Yet as Lovink (2004: 4) reminds us, there is a pressing need for social scientists to move beyond polarised debates of either 'rejecting or embracing new media' and instead allowing themselves to think positively *and* negatively about digital technologies as the situation demands. It is perhaps most important to remain mindful that both these dystopian and utopian takes on contemporary education belie the continuous, messy nature of education 'on the ground'. Thus above all, the polarised nature of current discussions over the promises and realities of digital education draws attention to the need for caution and circumspection when making claims for any 'new' or substantially different forms of social action in late modernity. As such, all the preceding debates point to the need to acknowledge the continuities as well as the discontinuities of education in the digital age.

One particular problem with current understandings of technology and education lies in the curiously context-free and abstracted readings of learning that underpin many of the claims surrounding the remediation of digital education. As Crook (2008) has argued, current debates over technology and education are predicated upon presumed 'spontaneous appropriations' of digital technologies by individual learners, independently of other commitments to learning through formal educational provision. More often than not the educational 'promise' of digital technologies is imagined in terms of autonomous technology-based activities taking place within benign, context-free online environments. Yet as our previous discussions have highlighted, the educational

realities of digital technology use (be it at home, in school or on the move) are situated within restricted social contexts. As such we need to acknowledge the obvious continuities, as well as the potential discontinuities, of education in the digital age. As Gane (2005: 475) reasons, a key question underlying analyses of digital technology and the social 'is whether technology-based action simply *adds on* to existing social relationships or in fact, transforms them'. In the case of education in the digital age, we would argue strongly for digital technologies adding onto existing social arrangements rather than transforming them.

Thus, the discourses of novelty and transformation that surround digital technology in education should not conceal the fact that the dominant reference points of education in the early twenty-first century remain much as they were in the late nineteenth century. Whilst many educationalists may prefer to imagine otherwise, contemporary education remains concerned essentially with the instrumentalist 'consuming of massive amounts of symbolic information' (Monke, 2008: 4). For better or worse, the prevailing modes of learning in (over)developed countries continue to be the delivery of information to individuals in formal education institutions in order to gain qualifications for the labour market and/or to facilitate further education progression. Thus, whilst there is an understandable valorisation within the education community of instances of informal learning that can occur in an unstructured, incidental and sometimes unintended manner, these do not constitute the dominant forms of education in contemporary society. Instead, privileged forms of elite knowledge remain the preserve of formal education provision, most notably through the apparatus of the school, the examination and the curriculum. As best, the unfettered forms of informal learning so celebrated by educationalists remain largely an additional benefit for the already educated middle classes who prosper most from all forms of learning.

It therefore makes very little sense to assume that the school, college and university are losing significance and status in the face of technological progress. Any analysis of contemporary education cannot disregard the integral role of formal education institutions in maintaining the logic of capital through the standardisation, fragmentation and hierarchisation of functions and objects (Lefebvre, 1981). In these terms at least, schools, colleges and universities can still be considered to still be highly effective technologies. As such, one would not expect the formal education institution to disappear, especially in light of the 'historical flexibility of schools as organisations, and of the strong social pressures that militate for preservation of the existing

institutional structure' (Kerr, 1996: 7). Thus, despite their potential to support decentred social action, one should not expect digital technologies to be capable – in and of themselves – of altering these social relations. As we have attempted to show in this chapter, there is ample evidence of the role of digital technologies in supporting and strengthening schools, colleges and universities in fulfilling their role of 'core institutions of capitalism' (Garnham, 2000: 142). As Torin Monahan (2005: 183) concluded in his ethnographic study of US urban high schools, the asymmetrical power relations of education and society are often maintained by technology-based learning, with digital technology 'provid[ing] neoliberal orders with both galvanising rationales and structural support'.

In this sense, education in 'the digital age' should be seen as marking a set of continuities – rather than a set of radical discontinuities – from education in preceding ages. Whilst digital technologies are associated clearly with some profound alterations to the organisation of education and learning in society, there is nevertheless a need for sociologists to challenge the notion that digital technologies are somehow transforming the power relations between individual learners and formal institutions or even transforming long-standing issues of production, reproduction and domination. It is therefore incumbent on sociologists to set about producing nuanced socio-technical readings of education in the digital age that seek to develop rich understandings of the social and interactional circumstances in which digital technologies exist and through which they attain their meaning(s) in education settings. With this aim in mind, we conclude this chapter by considering briefly the forms that such analyses of digital education may take.

First and the foremost, we would stress the need for more sociological writing and research that focuses on the present realities rather than future possibilities of technology-based education. As we have seen throughout this chapter, the topic of technology use in education invites a forward-looking perspective, with many writers and researchers preferring to concentrate on 'state-of-the-art' issues. Writing on the topic of educational technology is often overly concerned with questions of what *should* happen, and what *could* happen once new technologies and digital media are placed into educational settings. Whilst these concerns are laudable, it seems appropriate that sustained attention is brought to bear on questions that could be termed as being 'state-of-the-actual' as opposed to being 'state-of-the-art' – that is, questions concerning what is *actually* taking place when digital technologies

meet education. In the face of considerable theoretical excitement over the new dynamics of information and society, there is clearly a need to retain sociology's 'dearly held commitment to the here and now, the empirical and the demonstratable' (Cavanagh, 2007: 7). In this sense, we are reiterating Beer and Burrows' call for sociologists of the digital to concentrate on developing 'thick' descriptive accounts of the present uses of technologies *in situ*:

> We are of the view that the discipline would do well at the present juncture to . . . embrace a renewed interest in *sociological description* as applied to new cultural digitisations . . . . At a time of rapid socio-cultural change a renewed emphasis on *good* – critical, distinctive and thick – sociological descriptions of emergent digital phenomena, ahead of any headlong rush into analytics, seems to us to be a sensible idea. We need to understand some of the basic parameters of our new digital objects of sociological study before we can satisfactorily locate them within any broader frames of theoretical reference.
>
> (Beer and Burrows, 2007: 1.1)

Second, there is undoubtedly room for sociological critiques of digital education that offer culturally plausible suggestions as to how current inequalities and hegemonies may be countered, and how technology use in education may be reshaped along fairer and more equitable lines. This suggests a sociology of digital education that builds upon Ann Oakley's (2000) notion of social science research that is democratic, interventionalist and emanicipatory. In particular, there is a need to first detail and then test the opportunities available to educators, learners and other interested parties to take advantage of the inherently political process of technology production and use. In this sense, then, sociologists can identify spaces where opportunities exist to resist, disrupt and alter the technology-based reproduction of the 'power differential that runs through capitalist society' (Kirkpatrick, 2004: 10). It may be that inspiration can be drawn from the last three decades of computer 'counterculture' and 'hacktivism' – not least the activities of games enthusiasts, amateur software modifiers and the rise of open-source software and hardware production. In this sense, there is an ongoing need for sociological analyses that highlight the tensions and liminal spaces where digital technologies can be challenged and reconfigured in education. As Lefebvre (1981) reasoned, social scientists should concern themselves with addressing the tensions that exist between the

rhetoric and reality of technologies in society. This involves looking for opportunities to force differences where there is homogeneity, to force unity where there is fragmentation and division and to encourage equality where there is hierarchy.

Conclusion

It is clear that sociology has a key role to play in (re)thinking education in the digital age – not least in questioning and challenging the excess of technophillia that continues to pervade accounts of contemporary learning and learners. In particular, a range of pressing questions should be asked of how digital technologies are *actually* being used in educational settings, as well as how they *could* be used. These include basic questions of equality and diversity concerning *who* is (and who is not) doing *what* with *which* digital technologies. Questions also need to be asked of why technologies are being used and with what outcomes. Similarly, questions should be asked of how the use of digital technologies sits alongside pre-existing cultures and structures of educational settings. In all these instances, sociologists should be striving to highlight the continuities of long-standing educational issues of structure and agency, social reproduction of inequalities, regulation, power and domination. Yet as we have just argued above, questions can also be raised about the potential discontinuities of digital technology use in education. For instance, how can uses of digital technologies be encouraged within educational settings that challenge or disrupt existing social relations and inequalities? Where do opportunities exist for learners and educators to realise the rhetorics of democratisation and empowerment that surround digital technology? Is it possible to utilise digital technologies to resist the expansion of neo-liberal ideologies? It may appear perverse to conclude this chapter with such a mass of questions rather than answers. Yet if education in the digital age is as socially significant as many would have us believe, then it is essential that socially significant questions be asked of it. Developing these questions into sustained empirical and theoretical analyses should now constitute the next step of a rigorous sociological rethinking of education in the digital age.

Note

1. In highlighting the low profile of education technology within sociological literatures, we are well aware of the tradition of critical social analysis of education technology that flourished briefly in the late 1980s and 1990s. Indeed,

anyone seeking to make sense of the contemporary education technology landscape would do well to go back to the perceptive pre-Internet analyses of 'education computing' and 'micros in schools' offered by writers such as CA Bowers, Larry Cuban, Steven Hodas, Stephen Kerr, Hank Bromley, Michael Apple, Kevin Robins and Frank Webster. These writers all offered carefully constructed and wide-ranging sociological critiques of the education technologies of their time. Yet almost all these authors saw their arguments ignored by the mainstream academic education community and most moved quickly on from education technology as a fruitful area of study. That the likes of Apple, Bromley, Kerr and Cuban are not commenting on the current excesses of Web 2.0 technologies in education is a great shame – the literature on education and technology is poorer for their absence.

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14

E-Health and Renewed Sociological Approaches to Health and Illness

Joëlle Kivits

Introduction

A vast body of literature on the Internet and healthcare has emerged over the course of the last decade. A quick search on the main bibliographic databases reveals thousands of references on the use of information and communication technologies (ICTs), particularly the Internet, in medicine or healthcare. The peculiarity of this literature is that it blends a range of different disciplines: medicine, sociology, psychology, geography, IT and information studies and so on. It is tempting to see this literature as the indication of the emergence of an entirely new field of study, often referred to as e-health studies. Discussions of e-health have the advantage of being generic and of including all studies examining health and the Internet. The eEurope website provides the following definition of e-health:

> . . . application of information and communications technologies (ICT) across the whole range of functions which, one way or another, affect the health of citizens and patients.[1]

This definition is the reflection of a number of concerns related to the re-organisation of healthcare, including innovative communication possibilities for a range of professionals (general practitioners, pharmacists, home care professionals, etc.) delivering care and information to patients and to the public as well as for developers of healthcare products (pharmaceuticals, medical devices, ICT applications, etc.). The definition also suggests a number of professional, economic and policy issues and agendas. From an academic perspective, the specific focus (particularly in the social sciences) is the use of the 'Internet and

electronic media to disseminate health related information or services' (Gustafson and Wyatt, 2004: 1150).

The research area devoted to health and ICTs broadly examines the technical and technological conditions of the possibilities provided by the Internet in terms of communication, networking and health monitoring. Sociology has embraced this questioning. Yet the focus of recent research in the area is not the technological conditions of Internet applications in healthcare so much as the impact of Internet use on the experience of health and illness. Ten years after the publication of two seminal sociological analyses of health and the Internet (Hardey, 1999; Burrows et al., 2000), new or renewed conceptions of health and illness might be said to have emerged through the filter of the Internet and its current and future uses in the context of health and illness.

After a brief presentation of the nature and development of e-health, this chapter examines the construction of health and the Internet as subjects of academic research. Renewed sociological approaches to health and illness based on the insights provided by the Internet and health studies are subsequently developed.

Health in a digital age or 'e-health': what is at stake?

It is interesting to note that the definition of e-health beyond the general designation given above has become a subject of intense academic debate: the *Journal of Medical Internet Research*,[2] launched in 1999, initiated the debate a decade ago by discussing the exact nature of the e-health field and the range of activities which it encompasses (Eysenbach, 2001). More recently, the debate has been addressed in terms of web 2.0 development and the impact on e-health research (Eysenbach, 2008). This literature has established health in a digital era (specifically 'e-health') as a complex activity and field of research involving a large number of actors from a whole range of areas (including trade and business) that is constantly evolving and developing.

However, the interactive communication component appears to have characterised the field of e-health from the outset. A study of the development of the field over the last 15 years makes this particularly clear: the earliest developments in e-health – and the new hope which they brought about (Lloyd Williams and Denz, 2009) – mainly concerned future healthcare services in which relations between professionals and patients would be served by new technologies to improve the delivery of care and treatment. Better connections between health actors, including not only patients and the general public but also institutions

and politics (Rice and Katz, 2001), were deemed to be the key to future developments in healthcare. The possibilities offered by interactive technologies were thus seen as opening an entirely new era of healthcare.

A closer examination of technological advances and predicted transformations in healthcare suggests three main issues. Firstly (and this applies to the majority of e-health activities), e-health appeared to emerge as a result of telemedicine, before extending beyond it (Della Mea, 2001). Telemedicine preceded e-health and the delivery of 'distance' healthcare: telephone helplines were (and remain) examples of telemedicine. From the 2000s, telemedicine began to benefit from the development of interactive technologies and new ways of practising telemedicine were subsequently envisaged, including (among others) health surveillance and monitoring, particularly for patients with chronic conditions who are able to remain connected to other patients and professionals (Street and Piziak, 2001), enhanced access to care by means of email (Menachemi and Brooks, 2006) or, more recently, programmes of health education based on interactive technologies (Gomez-Zamudio and Renaud, 2009). Interactive technological developments have served to improve the delivery of healthcare, bringing telemedicine into the field of e-health. The key issue for the development of e-health here is the emergence of new means of communication, enabling health professionals, institutions, patients and the general public to remain permanently connected. Better access to care for all and new professional organisations were the key issues at stake.

A second aspect of the transformations shaping the field of e-health is 'simply' medical innovation. New technologies (including interactive technologies) have significantly improved cure possibilities, for example the possibility of surgery in two physically and geographically different places (for the surgeon and the patient). The distinction with telemedicine as described above may seem insignificant in as much as medical innovation also implies connectivity. Yet the distinction is both significant and relevant. The results of technological performance are measured in terms of medical success and progress. The aim is to obtain better medical results by using improved technology. The interactive component is mainly between technologies themselves, relegating connectivity between actors as a matter of secondary importance. The issue is not healthcare access so much as medical progress.

A third aspect of the field of e-health relates to virtual health. Virtual health is rarely discussed today in the current literature. Yet the concept was a focus of intense debate in the late 1990s and early 2000s. Virtual

health refers to new ways of experiencing health and (more specifically) new ways of experiencing the body. On the one hand, echoing postmodern theories and body theory, virtual health refers to the possibility of a new body surpassing its physical aptitudes and limits in order to gain new competencies in a 'cyberspace' (Featherstone, 1996). The body becomes a cyberbody, a 'superhuman' evolving in a virtual world. The experience of health and illness is impacted in as much as illness and disabilities inevitably disappear in a virtual world. Yet body issues cannot be totally ignored in everyday health (Bendelow and Williams, 1998). The experience of health as well as illnesses, diseases and disabilities can only be affected partly and momentarily by the cyberspace and need to be connected offline for the purposes of treatment (Hervier, 2009).

Virtual health also refers to a type of health activity that first became significant in the early 2000s: virtual health communities. Virtual health communities brought patients or health-concerned publics together on the Internet. Geographically distant though sharing similar health questions, issues, or health conditions, community members were able to discuss and exchange their experiences using the Internet. While they were gaining visibility on the Internet, the particularity of such groups or communities is that they were also gaining influence over and within the 'real' world. Some communities were establishing a voice as community members, including patients, citizens and individuals (all living offline). Health professionals, institutions and even politicians could not ignore their voice. Virtual health communities promoted public debate on health (both online and offline), which had previously remained limited to (and restricted by) the patient–professional relation.

It was at this stage that sociologists entered the scene. While they had remained relatively distant from developments in e-health – where such issues were left to health professionals, policy-makers and medical informatics – sociologists found in virtual health communities an inspiring object of study.

Studying health and the Internet: the medical gaze *vs.* the sociological gaze

From the outset, two different disciplines have competed to defend their own perspectives on the Internet and health: medicine and sociology.

With an increasing number of Internet users (so-called e-health seekers, Internet health information seekers or online health information seekers (Kivits, 2004)) visiting health websites at the dawn of the 2000s,

it was only natural that medical professionals and researchers should eventually display an interest in the new trend. In view of the available statistics and the growing space given to health and illness on the Internet (Fox, 2006), it seemed reasonable to assume that patients would never be the same. The *British Medical Journal* embraced the debate in an issue published in 2002. Subtitled *Trust me, I'm a website*,[3] the issue discussed the new profiles of patients using the Internet for health reasons, existing websites dedicated to medicine, health and illness and more importantly the quality of information found on the Internet and how Internet users assess health information. The quality of information emerged as a significant issue in the debate, with studies demonstrating how information found on the Internet is not invariably accurate and may in some cases be false and misleading, thereby representing a 'danger' for users. It was also shown that Internet users do not have the competencies required to assess the accuracy of information and that they often tend to scan information without evaluating the reliability of websites and their publishers (Eysenbach and Köhler, 2002). In 2001, Berland et al. had already expressed deep-seated concerns about the accessibility and readability of health and medical information. Despite some hopes for an improved development of the Internet that might be of benefit to doctors, patients and the general public (Ferguson, 2002), the image of online resources dedicated to health given by the medical field was (and to some extent remains) distinctly negative.

Interestingly, a diametrically opposed view was adopted by social scientists also engaged in studying the use of the Internet for health and illness reasons. In a pioneering study, Hardey (1999) enthusiastically suggested that Internet users could acquire expertise by accessing health websites and that a new era of patienthood was emerging, with patients becoming empowered by the Internet. Burrows et al. (2000) shared Hardey's optimistic view of the Internet by examining virtual support groups. The majority of sociological studies in the field also adopted this approach through close examinations of the empowerment enabled by the Internet as an information tool and the support possibilities of the Internet used as a social network. The information provided by online resources included not only health questions and ways of remaining in good health but also insights into chronic conditions, cancer, AIDS, serious or rare illnesses and the way in which the Internet would impact on the management of these diseases and conditions. More nuanced perspectives were progressively developed, including Henwood et al. (2003), who suggested that patients are not necessarily empowered or victimised as a result of using the Internet. More recently, Lemire et al.

(2008) characterised types of empowerment that are not unique but multiple, thereby demystifying online health information seekers.

Until the mid-2000s, both negative and positive views of the Internet emerged in the field. However, though it remained an important focus of research, the Internet gradually gave way to related sociological issues that would eventually become central to the field. Classical questions in the sociology of health and illness (such as doctor–patient relationships) were re-visited, while new approaches to health and illness in the contemporary era were also developed.

Renewed approaches to health and illness in the era of the Internet

Through the filter of the Internet and health studies, three main research themes in the sociology of health and illness have emerged: firstly, the question of health and illness and the management of related issues by individuals and populations; secondly, the question of patienthood and the emergence of the 'informed patient', thereby leading to a re-evaluation of the trust and expertise deployed in the relationship between health professionals and the general public; and thirdly, the question of agency and the theorisation of the concept, which has undoubtedly benefitted from Internet and health studies.

Revealing the healthy status: experiencing health online

One of the key issues highlighted by Internet and health studies is the sheer diversity of health and illness experiences. This diversity is evident from the perspective of the user–patient–individual. However, it is important to discuss the Internet and health in general and the construction of the uniqueness of the Internet as a medium of information and of the patient conceived as an unvarying online health information seeker.

Departing from its focus on online health information seekers, sociological research has tended to emphasise the diversity of Internet health information seekers. Patients suffering from cancer, AIDS, rare illnesses and so on; a parent of an ill child or caring for a dying spouse; subjects living with back pain, eczema, diabetes and so on; individuals searching for advice on weight loss and so on – all of these represent experiences that prompt patients or those who care for patients to use the Internet. Online health information seekers use the Internet in different ways and access different online spaces. As patients, they may resort to regular or occasional face-to-face encounters with a medical professional.

As persons suffering from health conditions or illnesses, sociological research suggests a multiplicity of experiences. The specific contribution of sociology is to have deepened our understanding of online health information seekers, primarily by depicting a series of sufferer and carer profiles. In so doing, the diversity of the Internet is also highlighted. Commercial, institutional or scientific websites containing health information or interactive tools, products and services (Kivits, 2008), and more recently publicly shared personal online spaces (Hardey, 2002; Legros, 2009) co-exist on the Internet and may all be used for health reasons.

The contribution of sociology to the issue of the Internet and health connects with a well-established research focus in the sociology of health and illness: illnesses are experienced differently by different individuals, and the way in which individuals experience health and illness conditions needs to be situated in a specific context. Education, income, living conditions, profession, family and friend networks are also part of the experience of illness and therefore of an Internet and health experience (Kivits, 2009).

However, one aspect suggests an altogether new issue and approach: the Internet has fostered the expression of a previously undisclosed kind of 'health experience'. The status of early online health information seekers was distinctly ambiguous. While the Internet was seen unsurprisingly as a resource offering unlimited possibilities for accessing health information and support, a more intriguing point is that seekers of information concerning health and illness were generally revealed to be in good health, suggesting that the profiles of information seekers extend beyond the standard patient profile (Ferguson, 2002). As suggested above, carers searching for health information on behalf of family members or friends represent a significant proportion of the healthy population of information seekers (Ferguson, 2002; Fox, 2006). Along with carers, a significant number of information seekers also share a general interest in (or inclination towards) remaining fit and healthy (Nicholas et al., 2001; Lemire et al., 2008). The specific profiles of users resorting to the Internet for health reasons are thus challenged, as are their motivations and the signification of such motivations.

The core issue is thus re-formulated: from an understanding of uses of the Internet for health reasons, sociological research has shifted to the question of personal health and its place in the contemporary era as a resource and lifestyle, thereby merging with a sociological and social policy literature that is currently in the process of developing critical perspectives on public health and health promotion. Sociology

defends the replacement of Parsons' sick role by the 'health role' (Kivits, 2004), responding to the concerns of general and healthy populations, who are exhorted to take responsibility for (and constantly improve) their health (Bunton and Burrows, 1995; Lupton, 1995). Contemporary everyday health experiences are marked by a culture of health consumption in which choices concerning personal health are left to the individual (Bauman 2000; Henderson and Petersen, 2002). Interpreted in the context of the new consumerist culture in healthcare, information practices can be seen as a fundamental resource for promoting better health (Shilling, 2002) and active information seeking (on the Internet or via other sources) as indicative of individuals' awareness of personal responsibility. Conversely, online health information seeking might be viewed as an obligation for individuals: by enabling individuals to make choices about health and ways of stating healthy, keeping informed becomes the 'norm of conduct' (Rose, 2000).

In short, the Internet is viewed as part of a new way of 'doing health'. Sociological insights have re-situated the use of the Internet in a broader media environment not limited to the Internet (Seale, 2003; Kivits, 2008) and have developed new ways of conceiving health and illness in the digital age.

Trust and expertise in the public–professional relationship

Internet and health studies have also revisited the concepts of trust and expertise. In the context of healthcare, the natural focus is the patient–professional relationship or, more accurately (since we now know that health information seekers are not necessarily patients) the public–professional relationship. The Internet is deemed to have disrupted this relationship, either positively or negatively according to the competing perspectives developed earlier in this chapter. The two concepts are intimately connected in having changed the relationship.

Trust and expertise have occupied a central position in discussions of the impact of Internet use on health and illness experiences. This is because experiences of health or illness include the encounter with a medical professional. This has tended to set up a clear opposition between the two sides of the public–professional relationship – that is, laypersons surfing the Internet, searching for information, interacting with other patients, and communicating online and medical professionals and experts who have tended to cast a suspicious eye on Internet developments. The Internet is deemed to have damaged trust in medical professionals. Some studies have shown how medical language can be reinterpreted in the light of online information (Akrich and Méadel,

2002). The trustworthiness of information content and sources represents a significant dimension of information seeking (Eysenbach and Köhler, 2002): health information users may show distrust towards the Internet and therefore express the need to establish trust towards the information found online. Yet the need for trust does not involve establishing the scientific validity of online information since it involves the direct use of an everyday repertoire (Kivits, 2006; 2009; Henwood et al., 2003). The interesting issue is how trust and distrust apply equally to the Internet and professionals. If the culture of suspicion becomes the norm in the contemporary era (O'Neill, 2002), experts will tend to be distrusted as much as the sources claiming to replace experts. Here the Internet is in the line of fire. The experience of the information seeker as a patient, carer, healthy person or parent thus becomes central and predominant in competencies for rating the validity of an information source (be it the Internet or a professional).

This raises the issue of expertise in the public–professional relationship. The most frequently discussed issue in Internet and health studies is the expertise of the information seeker. The two competing perspectives in the field (i.e. medicine and sociology) agree that the expertise of the lay person is changing. Characterising the nature of such change and its impact for both the layperson and the professional is a more controversial issue. The question raised is not whether an Internet user searching for health information may become more knowledgeable, but rather the status of such knowledge that is sometimes opposed to the knowledge of professionals. Interpretations of this issue tend to vary. For some, such knowledge is likely to pose a challenge to the public–professional relationship insofar as it represents a new kind of expertise (Ziebland, 2004). Conversely, it may also provide support to medical experts by offering a complementary form of expertise (Henwood et al., 2003; Kivits, 2006). Sociological research on the Internet and healthcare relates this issue to a broader consideration of the destabilisation of expertise in the contemporary era. In Internet and healthcare studies, a parallel is drawn with the increasingly self-reflexive individual (Giddens, 1991), who must be informed in order to act responsibly.

Seeking and negotiating health information: some thoughts on agency

The Internet operates as a means of seeking information, discussing illness, exchanging and sharing information with others, accompanying diagnosis and treatments and so on. More recent studies of health and the Internet (Kivits, 2009; Lemire et al., 2008; Legros, 2009) have

interpreted these practices as being grounded in everyday experiences. Aware as they are of their informational surroundings and the quantity of available information, online health information seekers deliberately limit their use of the information possibilities open to them. It is primarily in relation to personal experiences that users seek or share information, thereby embedding the Internet in a media environment and health and illness in an everyday and intimate context.

Internet and health studies set the foundations for an informed health experience. From a sociological perspective, the informed experience characteristic of the digital age finds a new ground in the complexity and multiplicity of health and illness experiences. It also illustrates the oscillation between structure and agency (Giddens, 1991). On the one hand, Internet and health highlight the imperative of being informed about health, which is itself a reflection of an information society that requires individuals to be informed and shapes individual self-development based on information. On the other hand, the agency dimension of information seeking is manifest. Everyday life and health experiences direct information seeking and require individuals to find and establish links between their personal experiences and the available information, discarding information that is not directly experience-related. In short, the information seeker is at once an agent articulated around personal and intimate experiences including health and illness and an entity subject to information imperatives.

Intensified by digital technology, the information imperative has encountered the 'imperative of health' (Lupton, 1995). Individuals are exhorted to become healthy individuals, particularly by becoming informed about their health. While the wide diffusion of information tends to promote a culture of personal health responsibility from which individuals cannot escape (Nettleton, 2004; Lash, 2002), sociological research also shows how information serves to modify (if not evade) personal responsibility: access to information (specifically seeking and sharing information on the Internet) promotes the individual expression of a personal experience of health. While the imperatives of information and healthiness are becoming increasingly significant, information seeking allows the agent to negotiate these imperatives.

Conclusion

The purpose of this chapter was to review sociological approaches to health and illness in a digital age. It focused specifically on Internet and health studies that have attracted the attention of sociologists in

the last decade. It showed how renewed approaches to health and illness have developed while the focus of research was shifting. From the Internet conceived as an information tool for patients, research turned progressively to the uses of this tool and their sociological significance in a broader healthcare context. Profiles beyond the standard patient profile were made apparent, as well as other experiences of health and illness. Significantly, while digital technology (and more specifically the Internet) provided an opportunity for renewing approaches to traditional objects of study such as health and illness, sociologists researching health and the Internet have also provided new ways of understanding digital technologies. Sociology has provided a different view of the Internet in a healthcare context as the Internet has made new experiences of health and illness possible that are likely to become even more noticeable with the web 2.0 development.

Sociological views and new conceptions of health and illness in the digital age are therefore twofold: health and Internet technology. However, sociological approaches still suffer from an excess of enthusiasm for the Internet conceived as a tool that provides new ways of experiencing health. Sociological research would benefit from critical perspectives on the Internet and on digital health technologies more generally. Notions such as expertise, trust and agency developed in this chapter in order to provide new approaches to the experience of health and illness in the digital age may tend to minimise the role of technology. By undermining conceptions of the Internet as a rigid and dangerous tool for heath, sociology has undoubtedly made a significant contribution to the field. However, by gradually casting technology aside in favour of an analysis of uses in everyday health and positive new potentialities in terms of health or illness experience, the limitations of current technology are possibly underestimated. Just as the cursor was once blocked on technological supremacy, so it is now fixated on the supremacy of experience.

To avoid this unbalance, sociological research will need first of all to focus on current changes by adopting a multidimensional perspective (including a technological perspective). The web 2.0. development could potentially constitute a second phase in new sociological approaches to health and illness in a digital age, suggesting a technological perspective. It seems likely that sociologists of health and illness will be unable to avoid the role of technology in constructing the experience of health or illness. Secondly, sociological insights need to be more global in terms of actors. Individuals and medical and health professionals are usually the main actors studied by sociologists of health and

illness. Yet in a digital era, other actors need to be considered insofar as they also provide health information: website producers and editors, journalists and decision-makers are all part of the landscape and have contributed (directly or indirectly) to health and illness experiences through technology since health and illness have become digital. In that sense, changing experiences of health and illness will be seen as belonging not only to empowered individuals but also to actors evolving on and around the Internet and contributing more generally to the developing age of digital health.

Notes

1. http://ec.europa.eu/information_society/activities/health/whatis_ehealth/index_en.htm (last accessed on 29 July 2009). The eEurope initiative was launched in 1999 by the European Commission. Following the first plan in 2000–2002, The eEurope 2005 action plan promotes the widespread adoption of eHealth technologies across the EU by 2010.
2. http://www.jmir.org.
3. http://www.bmj.com/content/vol324/issue7337/ (last accessed 29 July 2009).

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15

Afterword: Digital Technology and Sociological Windows

Andrew Webster

It seems that the sociologies of education and health in the 'digital age' don't really ask us to do much 're-thinking' – at least not of sociology itself. While both chapters offer a critical rethinking of technology, they do so via a fairly traditional deployment of the canons of sociological critique – examining the contingent (messy), inequitable, and non-determinate nature of e-technologies while recognising that these same technologies offer new media through which conventional boundaries and hierarchies might be displaced or at least challenged and short-circuited. Both chapters also emphasise the resilience of structural and cultural processes through which social advantage and power are distributed and only partly reconfigured through the democratising possibilities of the digital.

Rather than re-thinking the sociological imagination, these commentaries provide critique rooted in the core traditions of the discipline, and a good job they do in this regard, pointing to the ways in which e-technologies are both enabling and constraining. Such a configuring of technology suggests a form of analysis of what might be called digital structuration, echoing the now classic work of Giddens (1984), and at the same time the co-production of society and technology, as those working in science and technology studies have shown (e.g. Rip et al., 1995; Bijker and Law, 1992; Jasanoff, 2004). So, in regard to the latter, Kivits argues, we have seen 'that through the filter of the internet and its present and future uses in a health and illness context, renewed or new conceptions on health and illness have actually emerged' (p. 214) a process of renewal or confirmation of, as well as of novelty and rupture within conventional understanding. In a similar fashion, Selwyn draws on Burrows and Beer's (2007) view that given its participatory nature, the web means that 'users are increasingly involved in creating

web content as well as consuming it', the so-called 'prosumer' of the digital economy and culture of Web 2.0. Moreover, both pieces emphasise the way in which the boundaries of the digital and the biological overlap rendering a form of embodiment in cyberspace.

At the same time, both papers emphasise that there has been and remains considerable hype (or 'cyberbole', Woolgar, 2002) associated with the putative changes that digital technologies have been said to deliver within the context of education and e-health. Indeed, Kivits criticises sociological analyses of e-health itself, as often overstating the empowering and transformative nature of the Internet. Both authors point to the durability of the offline in its physical and institutional forms and the 'friction' of existing institutional orders that constrain the potential freedoms and empowerment associated with the Web. This is far removed from Virilio's (2000) claim that we are becoming spatially detached from our physical environment. Indeed, Selwyn goes further and argues that within the context of education at least, the digital is far from being transformative; indeed, he argues to the contrary that '. . . education in 'the digital age' should be seen as marking a set of continuities – rather than a set of radical discontinuities – from education in preceding ages' (p. 207). Moreover, far from empowering, Selwyn suggests that the digital can lead to a dependency on informational sources and a decline in creativity and independence of thinking. Kivits suggests that simple binaries of the web as empowering or not fail to reflect a more credible and empirically warranted position (such as that of Henwood et al., 2003) which shows that web-users, or 'e-types' as Nettleton et al. (2004) put it, convey a mix of being empowered and disempowered.

These arguments could well be applied to sociological literature on the impact of the web/the digital in other domains, such as politics (e.g. Loader, 2007) or workplace relations (e.g. Mason et al., 2002), which often points to this enabling/disabling dynamic. The question then arises whether there are other areas that might be explored, what else might be possible that could open up the sociological to some serious re-thinking here? What new sociological windows – providing a new digital gaze – might we see opening up in current sociological work on the digital? There are a number that might be offered.

Firstly, beyond what we learn from the two chapters there is considerable headway being made today in examining the ways in which the temporal and spatial reconfiguring of social relations via the digital can occur, and this has involved a marrying of the sociological with work in social geography. Secondly, there is growing interest in the ways

in which we need to understand the data streams associated with the digital world, in their own right, and not simply as stabilised informational flows with specific and intended effects. Thirdly, there is a wealth of work, not touched on in either paper, on the ways in which Information and Communication Technologies (ICTs) are actually adopted, redefined and given different meanings in their context of use: this last point is not merely about avoiding any form of technological determinism, which is critiqued in both papers. It is also about exploring how the global, standardising imperative of ICTs are reframed yet to a degree retained in local settings, how digital technologies, whether in health, education or elsewhere are subject to multiple stabilisations, rather than one, at the local level. I will sketch out these three sociological windows in turn.

One of the most recent contributions to understanding the digital/spatial relationship comes in the work of Oudshoorn (2009, 2011; see also Poland et al., 2005) who has explored the ways in which telehealthcare redistributes responsibility for health care spatially, and most importantly, the work that has to be done in delivering such care. This involves patients, their carers and clinicians in new 'technogeographies' of care whereby work is simultaneously distributed across a number of places and spaces through ICT networks. The articulation between the virtual (tele) and physical space (of the home/clinic) reveals the different type of work, and indeed new type of worker (such as the telenurse), through which care is to be delivered. One of the key issues that Oudshoorn's work raises is where and how does clinical responsibility and governance lie where responsibilities are distributed across different sites and actors? Moreover, while in theory ICTs associated with telehealthcare may be cost-saving per unit basis they may generate unanticipated costs as they help unwittingly to redefine risk thresholds associated with health disorders and create new patient/carer demand for intervention and monitoring, thereby rendering the objective of care-at-a-distance more difficult to achieve.

Furthermore, where the design of a digital or any other health technology inscribes (i.e. presumes) specific contexts of use, but that technology is deployed in a different setting, we can expect that users will struggle to give value to it in the way envisaged by the innovator. A good illustration of this is the study by Heaton et al. (2006) of the use of life-sustaining technologies for seriously and chronically sick children, devices originally developed for use in a hospital setting. The meaning, combination, use, effectiveness and efficacy of the devices and systems (such as assisted ventilation and intravenous feeding) are quite different

in the home, where complex care regimens have to be managed by the children's families (including siblings) in conjunction with statutory and voluntary services. Many such technologies work only through constant monitoring and intervention which in the 24/7 nursing shifts of a hospital are more easily achieved. Parents were also responsible for preparing the equipment and providing supplies: the responsibilities and demands on parental time were extensive. As Heaton (in Webster, 2006) observes, 'While families were, to varying degrees, able to incorporate aspects of the care regimes into their everyday routines, at the same time, they experienced a range of difficulties as a result of the time demands of the care regimes being incompatible with other domestic, institutional and social schedules.' (pp. 138–39). So, not only place and space but also time(ing) becomes a crucial factor shaping the use and utility of healthcare technologies, digital or otherwise.

In addition, digital technologies used within the home, as assistive technologies for care of the aged, for example, have been shown to change the very meaning of the home itself. Through exploring what they call the 'topology of care', Milligan et al. (2011) show how the sense in which the home is a 'haven' – a 'personalised, private territory where habitual "modes of operating" are invented, organised and performed' (p. 33) – is disrupted by the introduction of digital care technologies. They write of the 'dis-placing of place' in the sense of such technologies acting to redefine the sense of occupation of a special place called home, one whose 'front door' is now circumvented by a range of digital technologies, so breaking down the boundaries between public and private space.

The second issue that we need to pay more attention to in our digital sociology relates to informational or data flows themselves, and in particular how data itself can take on its own life. Data – for example, captured through telehealthcare monitoring or educational surveillance systems – does not merely record, measure and report results that provide a digital biography of a patient or student. It also has its own biography – it moves across differing datasets, networks and locations. There is an increasing number of ways for biodata to be captured from and given up (Kitchin and Dodge, 2011) by individuals in pursuit of particular (health or educational) outcomes. These data then travel, are transformed and are transcribed into novel 'derivative' forms. Such biometries are deployed and assembled, recounting but also reframing in their own logics the lived and embodied expectations and practices they observe and capture, with both intended and unintended effects. This in turn raises the question of how these biometries are negotiated

and challenged by the very data-subjects to which they refer. There have been especially valuable contributions towards this area of inquiry by Amoore (2009; see also Amoore and Hall, 2009) and Savage and Burrows (2007), the former focusing attention on the role of emergent biometrics as data algorithms in the context of border surveillance that are beyond the empirical as such, yet provide for the management of an unknown, but ambient risk seen to threaten the state. Savage and Burrows in turn offer an analytically complementary analysis of the role of privately held corporate data based on consumer transactions and preferences that not only log choices but also actively shape them, such as is seen in Amazon's 'also recommended for you' or 'Customers who bought items in your Recent History also bought . . . '.

The third issue relates to the need to understand the context of use within which digital technologies are adopted (or not) and deployed (or not). All technologies, not merely those of digital form, are mediated by an expression of social relationships. What is therefore 'innovative' about them cuts across the social, the material and the technical and how these dimensions are expressed within quite specific contexts. Or as Barry (2001) has argued: 'What is inventive is not the novelty of artefacts and devices in themselves, but the novelty of the arrangements with other objects and activities within which artefacts and instruments are situated, and might be situated in the future' (pp. 211–12). This in turn means that though having common design features – such as the design algorithms underpinning smart-home technology – the ways in which these are used will involve multiple stabilisations rather than just one. While Woolgar (1991) was right to talk about the ways in which technologies/designers 'configure the user in the sense of providing them with cues and prompts about the most appropriate and indeed "best" way to use a device or instrument, users themselves configure technologies in multiple ways' (Oudshoorn and Pinch, 2003). Whereas this might often be seen as a problem for technology suppliers in as much as it appears to compromise the best use of a system, in fact this is precisely the way in which new technologies are accorded value and utility and what McLaughlin et al. (1999) have called 'useability'.

May and colleagues have taken this argument further to examine the range of factors that determine the take-up of technology, and on the basis of very detailed analysis of this they have gone on to develop what they call the 'normalisation process theory' (May and Finch, 2009), that is to say, a theoretical model that explores and explains how technologies – and much of their work has focused on digital systems – are normalised, routinised in local settings. Innovation is performed,

produced and stabilised over time but in ways that depend on its compatibility with the values and cultural norms of its context of use or, in May's terms, undergoes 'contextual integration'.

These three themes, I would argue, offer new challenges for a sociology of the digital that requires an engagement with other disciplines or perspectives, such as social geography and science and technology studies. In addressing these issues, sociology also will be more able to develop a much more nuanced perspective on technologies in general and move away from the bipolar disorder of technology determinism or social essentialism, which either overstates or ignores the role and agency of techne, materiality and things themselves. It is important that more of this type of analysis figures in mainstream sociology journals and books, to which this book is itself making an important and significant contribution. So, responding to the challenge that Latour (1992) laid down nearly two decades ago that technology and its associated devices and instruments are the 'missing masses' strangely absent from the sociological gaze, which, I have argued here, could be brought into better focus through a sociological window(s) on the digital.

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Index

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