Information and Communication Technologies (ICT) are having profound impacts on later life. These derive from changes in communities, networks and forms of connectivity that form the core elements of a network society whose reach is instant and global (Castells 2009). In the process, ICT appears to have created new social divides between those who are participants in the new networks and those who are not (Jaeger 2004). Researchers have identified divides by income, age, ethnicity, gender and place (Jansen 2010, Tacken et al. 2005). One of the most prominent of these is based on age, and this is reflected in the policies and concerns of governments and international organizations (Commission of the European Communities 2007).

However, while there is evidence for an age divide in some areas such as mobile phone access (Adams and Fitch 2006) there is also evidence that the ‘digital divide’ is narrowing and is mediated by social, economic and cultural factors (Sourbati 2009), expertise effects (Arning, Gaul and Ziefle 2010) and normative age related changes in ability (Charnes and Boot 2009). For example, analysis of American data has found that social networking use among older internet users has increased rapidly in recent years (Madden 2010). But this raises the question as to who these older groups are. Indeed, the increase in engagement among older groups has even persuaded some that research should now focus on ICT and the oldest old (Asla, Williamson and Mills 2006). This chapter will examine new forms of social relations and social connectivity that are emerging in the wake of unprecedented levels of diffusion of ICT. The chapter will address: theoretical approaches to new technologies and community in later life, trends in internet use among older people, research addressing the digital divide, patterns of motivation and use, the impact on social relations and social networks and the consequences for older people in temporal and spatial terms. Throughout the chapter the term Information and Communication Technologies (ICT) is used in a broad sense to cover the rapidly evolving field of computer technology, mobile and digital technologies together with their cumulative applications within Web 2.0 that allow the proliferation of social media, networks and virtual communication.

**Theoretical approaches to ICT and community**

The idea of communities being less rooted in place can be traced to writers such as Melvin Webber (1964) and Marshall McLuhan (1962, 1964), who saw individuals, their social interactions
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and social organizations as being shaped and transformed by new technologies. Over time researchers began to identify social ties that went beyond local ones. For example, Hunter (1978) referred to a decline in attachment to place as a consequence of extended networks of transportation and communication, and this led to notions of community relations becoming less localized or, as some suggested, the rise of community without propinquity (Wellman and Whortley 1990). These ideas contributed to a now longstanding description of ‘late’ modernity where time and space are reconstructed by instantaneous and increasingly globalized communication networks (Castells 1996, Harvey 1990, Giddens 1981).

Castells (2001) noted that communication networks remain connected to deep and enduring aspects of social life (including ties of family, kinship and friendship). The World Wide Web (and Web 2.0) has however extended and deepened the context for communicative mobility. A networked society therefore has effects at personal and individual levels, on understandings of space and time, and on community/social relations.

Some writers have focused on the role of ICT in enhancing individual connectivity perhaps at the expense of connections based on place, work, home and community. They thus refer to ‘networked individualism’ as comprising different forms of personal networks including personal community networks (Wellman 2001). Others have built on these insights to argue that there are parallel shifts in the experience of, and meaning attributed to, space and time (Ling 2004). In his influential writing in this field Castells refers to the meanings attached to places and their relative importance being increasingly related to their role in supporting network relations (Castells et al. 2007). Online groups or communities often exist without a shared locality and are based on shared interests, needs or concerns. Some early studies reflected a concern with time spent engaged with ICT and appeared to suggest that engagement with the technology led to lower family interaction, fewer community activities and higher levels of loneliness (Nie, Hillygus and Erbring 2002, Putnam 2000). Mesch (2008) suggests that these studies were based on pre-existing negative assumptions about the impact of ICT use.

A more positive account might view personal communication technologies as offering new forms of social glue and connectivity (Ling 2008). ICT has been seen to be a force for good by enabling re-connection to, or more frequent connection with, family, kin and friends separated by physical distance. It is possible to view the voluntary and interest based foci of virtual communities as having a similar basis to intentional communities or communities based around ideas of choice and deliberative democracy (Cnaan and Breyman 2008). The tension between perceptions of ICT as a threat to community and as an opportunity for new and positive forms of connectivity is a common thread in the literature and invites a more sceptical stance (Morozov 2011). It is important in this respect to distinguish between access to ICT, internet use and the use of social media. While they are interrelated, they differ in terms of their public, semi-public and private profiles, as well as the bounded nature of interactions and their online/offline effects (Murthy 2012, Boyd and Ellison 2007).

It is also useful to see engagement with social media as part of the process of (re)producing the self (Gackenbach 2007). This has consequences for meaning and a sense of being in the world. For example, through such processes, unwittingly or otherwise, both young and old may be becoming increasingly publicly visible (Turner 2010). Some researchers have focused on how technology use relates to various aspects of embodiment and suggest that the coding of computer technologies in terms of the competences of youth often reproduce hierarchies between young and old bodies (Buse 2010), while in the area of health, writers have suggested that digital technologies are involved in the construction of new and interrelated forms of patient assemblage and data assemblage (Lupton 2013).
In summary, studies of the internet and social life have diverse concerns and foci and are continually evolving and developing new insights. While avoiding deterministic approaches to technology and social relations, an important point to bear in mind is that because of the rapid development and diffusion of ICT, study findings tend to be superseded by new developments arising either from new technological forms or new uses of existing forms.

**Trends in internet use**

The use of the internet and associated technologies among older people is increasing, though it remains lower than among younger age groups (Dutton, Helsper and Gerber 2009). If we take the mobile phone as a key example of ICT use and uptake, we find that although rates of mobile cell phone ownership in the US still vary significantly by age group, ownership has increased from under one-third of households in 2000 to 91 per cent in 2013, with a 76 per cent ownership rate among the over-65s (Pew Internet 2013). In South America, during the first decade of the twenty-first century household ownership of mobile phones also increased consistently (Fernandez-Ardevol 2010a). In Europe, Eurostat data indicate that in 2008, 87 per cent of the 16–54-year-old population used mobile phones—only dropping slightly to 72 per cent among 55–74-year-olds. Across the European Union there are, however, marked international variations related to cultural and socio-economic factors (Fernandez-Ardevol 2010b). Research in the USA based on older adults using computers indicates that they are more likely to be younger, have had more years in education, be employed, have higher income, be healthier and be more likely to be critically engaged with technology (Cresci, Yarandi and Morrell 2010).

If the internet and mobile cell phones are key indicators of a ‘networked’ society, in Britain, such networks, which first developed within the younger generation, are now rapidly capturing and engaging people aged over 50. ONS data on internet access at household and individual level (Office of National Statistics 2011) show that older people are utilizing digital technologies in increasing numbers but the usage of these technologies may differ. Although use is largely for e-mail and for shopping, the internet is also increasingly seen as a site for online communities for older people. A large proportion of these ‘communities of interest’ appear to coalesce around medical conditions or personal and life problems (Jones and Fox 2009). Studies of older groups find that use and take up is related to the type of technology as well as other factors such as income, work status and marital status (Feist et al. 2010). Overall, however, it is simplistic to see technology diffusion in terms of younger groups as ‘adopters’ and older groups as ‘laggards’ (Wang et al. 2010).

**A digital divide?**

Concerns about a ‘digital divide’ in ICT use are widespread. However, research indicates that the factors associated with lack of engagement with ICT in later life mirror those at earlier ages and include: lack of relevance and lack of knowledge; social, personal and identity characteristics; socio-economic location; and rurality (Ji et al. 2010, Hashizume, Kurosu and Yamanaka 2009, Graham 2010). Older people with strong attachment to the past, or higher levels of ‘nostalgia’, appear to use the internet less and report lower comfort levels with ICT while those who use ICT more appear to be less risk averse (Reisenwitz et al. 2007). Some researchers, however, argue that focusing on age differences may miss out the ways in which elites, of any age group, are able to dominate online activity and digital production (Schräie 2011).

Despite such arguments, writers suggest that older people, having grown up with ‘electro-mechanical’ user interfaces, suffer from a generation-related lack of experience with
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software-style devices (Turner and Turner 2010). At a European level there is evidence that the
digital divide is age related (Mordini et al. 2009). Generational ‘digital’ divisions suggest that
while the young keep in constant touch with each other through the evolving technologies of
the internet and mobile phones, the majority of older people are left, stranded, in increasingly
isolated neighbourhoods with reducing connectivity with local kith and kin (Oksman 2006).
Attempts to re-order this divide have focused on either active re-education and reskilling of
older people or the reshaping of ICT to adapt to older people’s needs (Selwyn et al. 2003);
viewing ICT as ‘assistive technologies’ compensating for the deficits and disabilities of age (Kur-
niawan 2008).

Such studies imply a certain amount of constancy in the nature of technological horizons
and in the re-creation of age divides, as well as passivity in the habits and attitudes of older peo-
ple (Jones et al. 2008). Indeed, some scholars have suggested that there is a tendency within the
research literature to stereotype older people as passive and resistant to new technology (Loe
2010). However, while age differences in the ownership and use of digital technology were very
noticeable during the 1990s, when such technologies were emerging, it is unwise to consider
them intrinsic features of ageing, nor are they simply consequences of an un-traversable gener-
atiological divide or technological horizon. It could be argued that while the 1960s generational
gap between young and old did plausibly represent a major break in the lifestyles, attitudes and
economic circumstances of the ‘post-war’ generation, subsequent cohorts are much less distinct
in what might be termed their generational ‘habitus’ (Gilleard and Higgs 2008). Moreover, there
is some evidence to suggest that Web 2.0 technologies are ‘age neutral’ and that usage among
older groups is increasing (Stroud 2008, Conci, Pianesi and Zancanaro 2009).

Patterns of motivation and use

The technology acceptance model (TAM) is one framework that has been used by researchers
to interrogate factors affecting uptake. Good health, gender (being male) and a positive attitude
towards the internet have been found to be good predictors of internet use (Nayak, Priest and
White 2010). Adoption of the internet among ‘silver surfers’ appears to be related to work,
household activities and a need for services (Choudrie, Grey and Tsitsianis 2010). Psychological
barriers include anxiety about computers, perceptions of ageing and computer self-efficacy
(Jung et al. 2010). Narratives of rejection among older non-users revolve around benefits of
computers, discrimination against non-users, and not needing or wanting computers (Weaver,
Zorn and Richardson 2010). Problems raised by older people when trying to use ICT include
anxiety, lack of time and alienation (Turner, Turner and Van De Walle 2007). There may also be
more nuanced barriers arising from lack of awareness of the uses to which ICT can be put (Buse
2009). But here again, it is perhaps overly tempting to view older people as a problematic group
that requires intervention within the domain of ICT (Sayago and Blat 2010) when the barriers
they face are not dissimilar to those found across all age groups (Arning and Ziefle 2009).

Older adults primarily use the internet for interpersonal communication, followed by
information seeking, commerce and entertainment (Sum 2009, Wagner, Hassanein and Head
2010). Pfiel and colleagues (2009) have identified a number of important aspects to the content
of older people’s online social networks. First, online networks have different patterns of use
depending on whether they involve emotional or factual conversations. Second, self-disclosing
messages play an important role in the development of a social network. Third, light support
online can be distinguished from deep support, with the former being associated with large
numbers of reciprocal bi-directional links and the later associated with a sub-network with
mainly uni-directional links.
Impacts and consequences

Turning to the impact of ICT on social relations and social networks, and the consequences of these for older people in temporal and spatial terms, our understanding of these effects and interactions remains limited (Haythornthwaite 2005). ICT has been viewed as a means of fostering and promoting more age friendly communities (Lehning, Scharlach and Dal Santo 2010). For example, participation in ‘online’ games appears to offer benefits in terms of a sense of community and as a means of coping with ageing (Nimrod 2011), and social networking has the potential to reduce loneliness (Ballantyne et al. 2010), while activities such as e-mailing and internet searching are said to have a positive effect on social isolation (Maninger, Hynes and Sanders 2011). Furthermore, research on the use of internet bulletin boards indicates that social relations provide more routes to, and thus amplify, civic participation (Mesch and Talmud 2010).

Online older people appear to be proactive and empowered by the internet and potentially able to develop new communities of interest (McMillan, Avery and Macias 2008). Researchers have found that socially isolated older people, by becoming internet users, are able to keep in touch with friends and family (Rideout et al. 2005). In contrast, cyber communities may have a negative impact in terms of reinforcing withdrawal from the outside world (Sum et al. 2008). It may be that older people have been less exposed to the diffusive effects of the internet on social networks and may be less likely to acquire the links to virtual communities of young adults, but equally, access to ICT may be liberating for older people and is not necessarily detrimental to the social capital of older groups. For some writers, new technologies support the diffusion of hyper-consumerism, the imperative for health maintenance and the pursuit of pleasure and leisure that are features of ageing in late modernity (Doevendans 2009). While this may be an overstatement, it is certainly the case that the expansion of social networks beyond the local neighbourhood that domestic ICT enables can lead to profound changes in the nature of community in later life as spatial and temporal barriers are broken down. For example, analysis of UK ELSA data suggests that ownership of ICT and use of domestic ICT reduces the sense of attachment to a local neighbourhood, but this does not appear to reduce levels of trust or perceived friendliness of the neighbourhood (Gilleard, Hyde and Higgs 2007).

Conclusion

Developments in ICT have added a new dimension to the relationship between ageing and social connectedness. Patterns of ICT adoption and use are rapidly evolving and although there are lower levels of adoption among older people there is evidence that older groups catch up quickly and that there may be generational effects at work. Indeed, ICT may facilitate the development of aged based communities of interests or intentional communities and there is evidence that older people can and wish to become active users of technology. Although there is a clear decline in ICT ownership and use with age, this simple relationship hides rapid growth and heterogeneity within older groups. Critical points from the literature on ICT and later life include a tendency to frame older people as ‘passive’, ‘dependent’ receivers; a focus on how ‘comfort’ levels vary by age and type of technology; a focus on surveillance and control in the Fourth Age; and gaps in the literature with respect to how older people use ICT and the meanings they attach to technology. Although the evidence is mixed, the trends discussed in this chapter indicate that commonly held notions of older people as being excluded from networked society and constrained within spatial and temporal boundaries of traditional communities are subject to challenge and revision. Technological change, movement and mobility are often
associated with risk to older people, a threat to the safety, solidarity and social networks of the local community. However, in eroding the centrality of place they may also offer opportunities for enhanced connectivity and new forms of friendship and support. Examination of these new connectivities in later life provides an important vector for understanding ageing in the context of networked society and nascent globalization.

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