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Families without Borders: Mobile Phones, Connectedness and Work-Home Divisions

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ABSTRACT

This article examines the widespread proposition that the mobile phone dissolves the boundaries that separate work and home, extending the reach of work. It analyses data derived from a purpose-designed survey to study social practices surrounding mobile phone use. The key components of the survey investigated here are a questionnaire and a log of phone calls retrieved from respondents' handsets. Rather than being primarily a tool of work extension, or even a tool that facilitates greater work-family balance, we show that the main purpose of mobile phone calls is to maintain continuing connections with family and friends. Our findings suggest that individuals exert control over the extent to which calls invade their personal time, actively encouraging deeper contacts with intimates.

KEY WORDS

mobile phones / social contact / work-family balance

The public/private division has often been claimed as a distinctive institutional feature of modernity (Giddens, 1991, 1992; Weber, 1968). Arising in the middle of the 19th century but probably most fully achieved in the drift to suburbia in the middle of the following century, private life became the centre of new, secularized forms of self-fulfilment (Lasch, 1977; Zaretsky, 1976).

Against this background, any threat to the inviolability of this personal realm is perceived as a risk to family balance, intimate relations and personal identity.

So, it is hardly surprising that the potential of information and communication technologies (ICTs) to dissolve the boundaries that once separated work and home life is the subject of much debate (Felstead et al., 2005; Kaufman-Scarborough, 2006). The capacity of mobile phones to operate regardless of location gives rise to a new pattern of continuous mediated interactions that has become known as 'constant touch', 'perpetual contact' or 'connected relationships' (Agar, 2003; Katz and Aakhus, 2002; Licoppe, 2004). This blurring of the boundaries between absence and presence is associated with distinctive and more intense forms of connectedness. Some sociologists even claim that in a mobile society: 'the distinction between public and private domains should be dispensed with since nothing much of contemporary social life remains on one side or the other of the divide' (Sheller and Urry, 2003: 122).

Mobile phones also provide employers with the possibility of being connected to their employees at all hours. Much of the literature on the impact of ICTs stresses that perpetual contact encourages work problems to colonize the social spaces and times once reserved for family life (Chesley, 2005; Duxbury et al., 2006). However, Green (2002) argues that mobile technologies afford novel opportunities for deepening strong ties and making place irrelevant. Rather than fragmenting relationships, she argues that time spent using communicational devices makes relationships durable and continuing.

Building and maintaining relationships takes time, and a central theme in analyses of mobile devices concerns their effect on the social organization of time. From the 20th century onwards, the regulation of working time has been a major method of social coordination, underpinning the capacity of all individuals to participate in joint leisure and recreation. With the demise of 'standard working hours' and the rise of dual earner families, the difficulties of reconciling the time demands of paid work and family life has become a burning issue (Brannen, 2005; Crompton, 2002, 2006; Dex and Smith, 2002; Gershuny, 2000; Hakim, 2000; Lewis, 1997, 2001; McKie et al., 2002). As Durkheim (1984) noted, mechanical solidarity implies a temporal symmetry in daily life: everybody does the same thing at the same time. Family solidarity depends on the synchronization of its members' schedules, an increasingly difficult achievement given present flexible working-time regimes. One of the most distinctive features of the mobile phone is its use for the microcoordination of family arrangements and schedules (Brown et al., 2002; Cooper, 2002; Haddon, 2004; Ling, 2004; Ling and Haddon, 2003). The unparalleled rapidity of the diffusion of this technology may be linked to its indispensability for solving the temporal problems which family members face in everyday life.

Nor is the idea of the spatial separation of work and family as straightforward as it appears. Co-residence has traditionally been the characteristic used to define households not families (Harris, 1983). This idea is extended by Morgan's (1999: 20) notion of 'family practices', stressing that family life is always continuous with other areas of existence: 'family practices are not necessarily practices which take

place in time and space conventionally designated to do with "family", that is the home'. Rather, families are actively constructed through the day-to-day activities of their members, including in places of paid work. Hence the current emphasis on connectedness and relationality in the sociology of the family.

The division between home and work, apparently so natural, is historically specific and is built by social actors through repeated practices. Among these practices are those aimed at controlling the flow of information, communications and demands across this boundary. The very concern about 'spillover' and 'colonization' signals the contested, perhaps changing nature of the public/private divide. These debates assume that mobile technologies inevitably produce workers, consumers and parents who are perpetually available. So how involuntary are the 'intrusions' that permeate the border between work and personal life? Do people still place the same value on having a spatially and temporally delineated private sphere? Is it still a precondition for leisure, intimacy and a self-created, personal life?

To date, research on the social impact of the mobile phone has been limited. While there is much theorizing about the impact of digital technologies on society, survey research has predominantly focused on the internet; for example, Pew Internet and American Life Project (2002), the World Internet Project and OxIS (Dutton and Helsper, 2007). In the USA, and Europe and Australia, research on wireless technologies has been largely qualitative, in an ethnographic mode or based on case studies (Glotz et al., 2005; Katz, 2003; Katz and Aakhus, 2002). Much of it emerges from media and cultural studies, making no claims to be statistically representative (Goggin, 2006). The few extant surveys have been based on administrative data (kept by service providers for their own organizational purposes), mapping the demographic characteristics of mobile phone ownership, as well as identifying the scale and range of usage in different segments of the population (e.g. Europanel data).

This article examines data from a survey, purpose-designed to study social practices surrounding mobile phone use. We focus on how individuals and households are using the mobile phone to integrate the different dimensions of everyday life. The study gathers detailed information on how dependent users are on their mobile phone for work or other purposes. How important is the mobile phone for coordinating personal life? Furthermore, under what circumstances do users attempt to control contact via the device? Taken together, this information allows us to address the question of whether mobile phones help or hinder individual efforts to manage work and family.

Survey Design and Sample

The information presented here is among the first that is intentionally designed to investigate how the mobile phone affects the permeability of boundaries between home and work. The project employs a combination of novel methods of data collection that generate detailed representative evidence about the usage

of mobile technologies in both the workplace and in private life. The combination of instruments includes a questionnaire, a phone log and a time-diary. This combination uniquely provides direct information about how individuals and households employ mobiles to manage and coordinate their everyday lives.

Questionnaire items cover topics rarely brought together in a single study of the mobile phone and work/family boundaries. Survey subjects responded to questions about ownership and use of mobile phones; the perceived impact of mobile phone use on work and life balance (including measures of the quality of life); perceived effects on work and work/family spillover; effects on social support networks; and the phone's role in coordination and control.

Respondents are aided in producing an accurate log of their ingoing and outgoing communications traffic by drawing on the information already stored in their handsets. These phone logs permit respondents to provide us with a precise and comprehensive record of their telephonic activity. While some research has utilized billing information, this method fails to capture the substantial number of pre-paid customers for whom no billing records exist (Anderson et al., 1999; De Gournay and Smoreda, 2003; Licoppe and Smoreda, 2006). In addition, our phone logs provide information about incoming and outgoing SMS messages. Analysis of the special time-diary developed for this study will be the subject of another article.

The Australian sample, collected from March to May 2007, comprises all individuals aged 15 years and older in households. The sample was recruited from the YourVoice Internet Panel maintained by ACNielsen, one of the world's largest commercial data collection agencies. This panel is recruited using off-line methods (gathering respondents from other face-to-face and telephone surveys conducted by ACNielsen). The characteristics of the panel match those of the total on-line population. The sample is generally representative of the Australian population in terms of sex and employment status, but has a distinct bias towards those under 55 years of age. Australians over 55 years are also marginally less likely to own or use a mobile phone. According to the 2006 census, 58 per cent of Australian households have internet access at home. However, this underestimates internet access because large numbers of people access in other locations, for example, the workplace.

Panellists (and additional household members) were invited via email to complete the survey on-line. The company compensates respondents for their time by allowing them to accumulate entitlements to a catalogue of goods and services. In this study incentives were structured to reward whole of household response, with each individual receiving the equivalent of £17. Households completing the survey on-line were given a period of one week to complete the survey. It is difficult to calculate conventional response rates for internet surveys. Of the 3469 households contacted by email, 19 per cent of households started the survey but failed to complete it, while 51 per cent completed the survey. This gave a total sample of 1358 individuals from 845 households.

Mobiles as Indispensable for Everyday Life

Much of the writing on the mobile has taken as its starting point the extraordinarily rapid integration of the mobile phone into the fabric of everyday life. Worldwide there are now over 1.7 billion mobile phone accounts and 600 million more mobile phone lines than fixed lines (Castells et al., 2007). Much as in Britain, market penetration of mobile phones in Australia is over 90 per cent and, with a population of around 20 million, there are over 18.4 million mobile phone services in operation compared to 11.5 million landline phones (Australian Communications and Media Authority, 2005). As with many other countries, the rate of adoption of this device has been astonishing, rising from 42 per cent of the population to 90 per cent in the first five years of the 21st century. Reflecting this, almost 90 per cent of our sample personally use a mobile phone.

In order to measure the extent of people's dependence on the mobile phone, we asked respondents: 'How much would you miss your mobile phone if it disappeared today?' Respondents were asked to choose between 'I wouldn't miss it at all because my daily life could proceed as normal'; 'I would miss it sometimes'; 'I would miss it often enough that my daily life could not proceed as normal'; 'I would miss it often'; 'I would miss it an extreme amount'. Fewer than 10 per cent of the sample answered that they would be unaffected and their lives 'would proceed as normal' if they were suddenly without their mobile phone. In contrast, half the respondents indicated that their daily lives could not 'proceed as normal' if they were without their mobile. Of these, the overwhelming majority said they would miss the mobile phone either 'often' or an 'extreme amount'. Perhaps this reflects the sense of security they derive from carrying a mobile (three-quarters of our respondents feel more secure carrying a mobile phone).

For those who argue that the mobile phone promotes the colonization of personal time by job-related matters, it is important to know how much respondents depend on their mobile phones for work. To measure this dependence, we asked employees (N = 877): 'How regularly do you use your mobile phone (or other mobile device) for your job?' Respondents are polarized; with just over one-third answering that they use their phone 'often/very often' for job-related purposes, while another third say that they 'rarely/never' use their mobile for their job. A quarter of the answers fell on the midpoint of the scale, saying that they use their phone for work related purposes 'sometimes'. However, there is a powerful gender effect, since the majority (54%) of men answer that they 'often/very often' use their phone for their job, whereas the majority of women (52%) 'rarely/never' use it. Among occupational groupings, the heavy users of the mobile were found among the production workers (39%), trades people (36%) and managers (33%). Contrary to stereotypes and the marketing philosophy targeting managers and professionals as earlier adopters, these heavy use figures suggest widespread work-related mobile phone dependence among blue-collar workers.

Employed respondents were also asked: 'How hard would it be for you to do your job without a mobile phone (or other mobile device)?' Overall, over 57 per cent of the workers thought that it would be 'very easy' or 'moderately easy'

to do their job without a mobile phone. Conversely, a mere 8 per cent thought it would be 'impossible' to do their job properly without a mobile phone. However, there is a dramatic difference in response by gender, with three-quarters of women workers saying that it would be 'easy' to do their jobs without a mobile, while the majority (58%) of men thought it would be 'difficult' or 'impossible'. The majority of clerical workers and labourers thought it would be 'very easy' to successfully complete their work without a mobile phone while, on balance, approximately half of managers, professional workers and tradespersons thought it would be difficult, or in extreme cases impossible, to do their job without a mobile phone.

Patterns of Mobile Phone Use

The strongest evidence against the idea that the mobile phone is predominantly a device for work extension comes from information about respondents' usage patterns. Survey respondents report that calls on the mobile are predominantly for social or leisure purposes (32%), for managing home and family (29%), or for other interpersonal contacts (15%). Only 24 per cent of calls are related to work or study.

There are gender differences in the purposes for which calls are made. Over a third of men (38%) use their mobile phone to make calls for work or study activities, whereas only 11 per cent of women use it for this purpose. Social uses of the phone account for the remaining 89 per cent of women's calls. If anything, text messages are even more socially oriented and a smaller proportion of both men's (15%) and women's (5%) texts are devoted to work or study.

An analysis based on the actual records retrieved from the handset reveals that, of the 9714 calls made, contacting family (48%) and friends (26%) is the overwhelming use. Similarly, for both men and women, by far the most common recipients of text messages are family (45%) and friends (43%). Conversely, only a small proportion (16%) of calls are work related. Among calls to family members, for both men and women, the highest proportion are calls and text messages to one's spouse (18%). Women are disproportionately likely to phone their children (11%), parents (12%) and extended family (11%). On the other hand, in general, men are more likely to use the mobile for work-related calls, and this holds true even when employment is taken into account. Employed men devote 23 per cent of their calls to work-related purposes, while for employed women the percentage is 15 per cent.

The phone log (Figure 1) also reveals that work-related calls are mostly confined to standard working hours, rising sharply after 8 a.m. and declining around 5 p.m., with a small lunchtime dip. Work calls fall steeply after 5 p.m., trailing away towards zero as midnight approaches. Calls to family are less frequent in the morning than in the afternoon, rising at the time school ends, and having a pronounced peak before the evening meal. Throughout the evening, family calls are at a much higher level than work-related

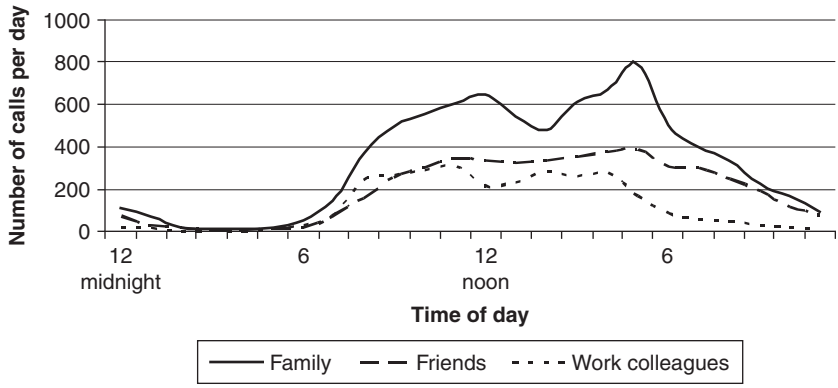

Figure 1 Frequency of calls by time of day and call recipient

calls. This pattern is consistent with the use of the mobile phone for microcoordination of family affairs, a point that is developed below. Contacting friends begins mid-morning and remains sustained throughout the afternoon and early evening. During the entire evening, communications with friends are at a higher rate than work-related calls. The heavy use of the mobile in the evening for contacting family and friends (and not job-related tasks) is consistent with our view that the main purpose of the mobile phone is for social contact.

Breaking these patterns down by gender and persons called, we find that women are more likely to use their mobile phone to contact their spouse around the time of the evening meal and their children after school hours. Men, on the other hand, are more likely to use the phone for job-related purposes and exhibit a more muted pattern of family contact around after-school care and mealtimes.

Information retrieved from the handset log of calls demonstrates that the mobile phone is overwhelmingly used for social connectivity. Conversely, it is not mainly used for business purposes.

Mobile Telephone and Microcoordination

The other major property of mobile phones that has attracted the attention of researchers is its use for the microcoordination of family arrangements and work schedules. In the past, clocks were the key method of social coordination. The mobile phone has produced a novel, more flexible form of synchronization. Indeed, Ling has argued that: 'the mobile telephone has started to change the ways in which we organize and coordinate our everyday lives' (2004: 58). The idea of microcoordination involves the 'softening of schedules', adding slack to the more inflexible nature of time-based arrangements. The scheduling of events is relaxed through an ongoing sequence of reciprocal phoning ahead that

enables meetings to be renegotiated 'on the fly' so that the needs of parties can be progressively accommodated. As several other scholars have pointed out, such problems of coordination have become particularly acute as the result of changes in the temporal organization of daily lives and family practices (Southerton, 2006; see also Wajcman, 2008).

In order to explore this function, we asked respondents in multi-person households: 'How significant are the following reasons for using your mobile phone to facilitate family/household coordination?' Specifically, respondents rated 'planning meals'; 'arranging to meet with family/household members'; 'arranging to deliver goods or children'; 'finding out where children are'; and 'informing when to expect me home', on a five-point scale ranging from 'very important' to 'very unimportant'. The greatest importance is attached to information about the timing of the arrival at home (81%) and arranging to meet with other family members (82%). Among parents, 'arranging to deliver goods or children' and 'finding out where children are' is rated as important by 63 per cent and 58 per cent respectively. Mobile phones are rated as either 'very important' or 'important' for planning meals by just a third of the respondents. Part of the explanation for the rapid diffusion of the mobile phone would appear to be its widespread advantage in achieving flexible coordination.

Telephony and Balancing Home and Work

If the introduction of the mobile phone has not led to a substantial extension of work into the spaces and times reserved for personal life, but is chiefly used for social contact and for microcoordination, might the true significance of the mobile phone be that it facilitates work-family balance? Employed respondents were asked to rate: 'What impact has the use of your mobile phone had on your ability to balance your work and home/family/personal life?' on a five-point scale, ranging from 'increased a lot' to 'decreased a lot'. Very few respondents report that the mobile phone has had a negative impact on their work-life balance (3%). A high proportion of respondents (43%) say that it has no effect. Significantly, however, more than half (54%) of the respondents believe that the mobile helps them to balance their family and working lives.

Respondents were also asked about the timing of job-related and other calls to explore the extent to which work overflows into time outside their normal working hours. On a typical workday, 60 per cent of employed respondents made one or more job-related calls during working hours, compared to 86 per cent who made one or more calls for another purpose during these hours. Those making job-related calls during working hours are more likely to make heavy use of the mobile phone (16% make 8 or more job-related calls compared with 6% who make 8 or more non job-related calls). Examining mobile phone use outside of respondents' typical workday, the majority of respondents did not use their mobile phone for job-related calls. However, approximately 30 to 40 per cent of respondents make one to three job-related

calls outside their typical working hours or on weekends. By contrast, on these same occasions over 90 per cent of employed respondents used their mobile for purposes other than work. These patterns are not strongly influenced by occupation and exhibit the same gender differences (that is, men's job-related use is higher than women's) reported elsewhere in this article.

To investigate more thoroughly the possible effect of mobile telephone use on an individual's sense of the balance between their working and private lives, we conducted a multivariate analysis of a reduced form of the 'family strains and gains scale' developed by Marshall and Barnett (1993). This widely used scale, with good psychometric properties, measures the transfer of job-related stresses to family well-being and vice versa. The family strains and gains items ask respondents to rate their level of agreement with two pairs of statements designed to measure two dimensions – work to family spillover and family to work spillover. Work to family spillover is captured by the statements: 'because of my work responsibilities I have missed out on home/family activities that I would have liked to have taken part in' and 'because of my work responsibilities my home/family time is less enjoyable and more pressured'. Family to work spillover is captured by the statements: 'because of my home/family responsibilities I have to turn down work or opportunities I would prefer to take on' and 'because of my home/family responsibilities the time I spend working is less enjoyable and more pressured'. To derive a measure of both strains and gains, the average score of both items was calculated.

Using the phone log data, we explore the effect of the daily rate of calls made and received on both work to family spillover and family to work spillover, while taking into account a range of demographic and job characteristics. Demographic variables controlled for are age, gender, family type, number of children and employment status. Age is categorized into 24 years of age or younger, 25 to 54 years and 55 years and over. Family type is classified according to whether the household contains a couple or a lone parent and whether dependent or non-dependent children are present. Number of children in the family is a separate variable. Employment status distinguishes between full-time and part-time work. Job characteristics cover the employees' degree of control over start and finish times, the respondents' rating of work stress, the frequency of working unsocial hours and preferred working hours.

The analysis uses hierarchical linear regression that took into account that multiple persons came from the same household. The results of the analysis are given in Table 1. Contrary to expectations, the number of calls made and received on a mobile phone is *not* significantly associated with increased work to family spillover (or work-family strain). It seems that job characteristics have a far greater influence on work-family spillover than mobile communications – especially work stress and if employees are working longer than their preferred working hours. This is consistent with the findings of White et al. (2003: 191), that actual hours worked are the largest influence on negative job-to-home spillover. The other significant influence is gender, with males more likely to experience work-family spillover.

Table 1 Regression results for work-family and family-work spillover

	Work-family		*Family-work*	
Intercept	2.30	†††	1.45	†††
Age				
55 and over	0.20		0.25	
25 to 54	0.02		0.19	*
24 or younger				
Gender		†		
Female	–0.17	*	–0.02	
Male				
Employment status				†††
Part-time	0.07		0.27	**
Full-time				
Family type				†
Others	0.22		0.25	
Couple with children <15	0.36		0.30	
Couple without children	0.02		0.12	
Couple with children 15+	0.19		0.37	*
Lone parent with children <15	0.20		0.45	
Lone parent with children 15+				
Number of children				
1	–0.07		0.23	
2	–0.14		0.11	
3+				
Preferred weekly hours of work		†††		†
Fewer hours than I do now	0.29	***	0.17	*
More hours than I do now	0.03		0.15	
About the same hours as I do now				
Preferred start and finish times of work				†
Some degree of control over start/finish times	–0.12		0.16	*
No control over start or finish time				
Unsociable work hours				†
Frequent	0.10		0.25	**
Sometimes	0.16	*	0.08	
Infrequent				
Frequency of stressful working conditions		†††		†
Frequent	0.83		0.25	**
Sometimes	0.38		0.19	*
Infrequent				
Calls (made/received) each day	0.00		0.01	†

Notes: For whole variable † p-value< 0.05 †† < 0.01 ††† < 0.001

For comparisons to referent group *< 0.05 **< 0.01 ***< 0.001

Referent groups are 24 years or younger, males, full-time employment, lone parents with children aged 15+, three or more children, similar working hours to now, no control over work start or finish time, infrequent work after 8 p.m. or on the weekend, infrequent stressful work conditions.

Turning to family to work spillover, i.e. the extent to which family or personal affairs intrude into the workplace, mobile phone use (as measured by the frequency of calls recorded in the logs) is significantly related to increased family to work spillover. While the relationship is technically statistically significant, the volume of mobile phone traffic needed for family or personal affairs to meaningfully affect the workplace is very high. It would take 100 calls per day to increase the family to work strain from a moderate to extreme value. Once again, job characteristics (employment status, preferred working hours and work stress), age and family type have a greater influence on family to work spillover.

Permeable Boundaries: Controlling the Flow

Does the capacity of mobiles for perpetual contact automatically undermine the boundaries between work and home? After all, the mobile phone also affords considerable control over the flow of information. Voicemail, text messages, the silent mode, and ultimately the on/off switch permit asynchronous communication, allowing the user to choose when and how to respond. Or people might even decide to leave their mobile behind. So the evidence of how and under what circumstances users attempt to control the flow of communication tells us how they have incorporated the phone into their everyday life. In other words, the flow of workplace demands passing through the walls that separate home and work can be filtered.

A key feature of the work/life boundary is the practice of taking holidays, away from both the workplace and the drudgery of home. This spatial separation is the *sine qua non* of holidays. The mobile phone, as noted earlier, is uniquely designed to function independently of location. Consequently, the notion of being 'out of touch' while away on holiday no longer applies automatically. Mobile phone users can now choose whether to stay connected or enforce the customary break in communicative contact.

Employed respondents were asked: 'Do you normally take your mobile phone on holiday to talk to work colleagues?' Overall, the population of workers is evenly divided between those who do take their phone and those who don't. However, when this result is broken by gender, it is apparent that men (51%) are almost twice as likely as women (31%) to be using their mobile phone to talk with their work colleagues while on holiday.

An even more obvious way to control contact is to switch off the phone. We asked respondents: 'On which of the following occasions do you normally turn your mobile phone off or switch it to silent?' All but a small minority (90%) of the respondents 'normally' switch off their phone in the cinema, two-thirds switch off their phone at work meetings, and almost half turn off their phones in restaurants. Between a quarter and a third of respondents turn off their phones in other work situations and in order to concentrate. As might be expected from the literature on mobile phone usage in leisure situations, less than a fifth of respondents turn off their phone during leisure activities. Here again the contradictory nature of the affordances of the mobile phone are

apparent. On the one hand, mobile communications facilitate the organization and coordination of social and leisure activities. On the other hand, unwanted or unexpected phone calls that demand attention represent undesirable disruptions to the quality of leisure time.

Surprisingly, only a small proportion (one sixth) of respondents switch off their phone during mealtimes (and other times at home). The issue of control arises because the mobile phone enters areas once free of the possibility of contact, such as cinemas and restaurants, disrupting the enjoyment of strangers or the focus of work colleagues in meetings. Respondents consider transgressing such public spaces as more important than disrupting family harmony at mealtimes. Fewer than 5 per cent never switch their phone off, implying that people do exercise control over the phone's capability for disruption. These figures act as a reminder that the division between the public and private realms is still the outcome of social conventions and is not the obligatory consequence of machines.

The very idea of control implies that people may erect a boundary in order to maintain a distance between home and work, while wishing to use the same property of mobiles – constant connection – to strengthen ties with kin and close friends at a distance. Respondents were asked 'How important are the following in maintaining contact with your extended family?' and invited to rate various communication modalities on a five-point scale, ranging from 'very important' to 'very unimportant'. The mode of communication respondents considered most salient for maintaining contact with extended family were, in order of importance, the landline (83%), face-to-face visits (76%), the mobile phone (66%), followed by emails (61%), texting (48%), and then a large gap to the traditional modality of letter writing (23%) and the newest technologies of Voice Over Internet Protocol (VOIP) (16%). This finding about the different usage of the landline compared to mobile phones is consistent with the pioneering French research, based on billing records, which found a pattern of using the landline in the evening for longer conversations with relatives or friends and using the mobile for shorter calls (De Gournay and Smoreda, 2003; Licoppe and Smoreda, 2006). This suggests that the relative pricing of landline and mobile phone calls plays a role in explaining this usage pattern.

Regardless of the communication modality, women are more likely than men to value keeping in touch with relatives, with 86 per cent of women saying that the landline is either 'important' or 'very important'. Interestingly, nearly two-thirds of the women who regard the landline as a useful way of maintaining contact chose the most extreme positive response category of 'very important'. The same gendered pattern holds for mobile phones and emails. Although we have no detailed data on the content of calls and emails, the overall configuration is consistent with the literature on the gendering of the fixed-line telephone that has demonstrated that maintaining kinship relations is traditionally a task undertaken by women. Linda Rakow's (1992) American study of women's relationship to telephoning found that women's talk is gendered work, a form of care-giving that women do to hold together the fabric of the community, building and maintaining relationships (see also Moyal, 1992).

Indeed, some sociologists have argued that communication has become more central to intimate relationships with the new emphasis on reflexive self-identity, characteristic of modernity itself (Giddens 1991, 1992). Giddens argues that modern individuals view their lives as a project of constructing and progressively developing themselves, usually understood as an autobiographical narrative of 'self-actualization'. His concept of the 'pure relationship' – a relationship maintained exclusively for its own sake – stresses that a strong sense of personal boundaries becomes the foundation for intimate communication, building trust and depth through mutual disclosures about their inner, private selves. 'The imperative of free and open communication', says Giddens, 'is the *sine qua non* of the pure relationship' (1992: 194). As Jamieson (1999) has argued, such accounts fail to recognize the multi-dimensional nature of intimacy and the importance of practical acts of love and care required for sustaining it. For our purposes, however, the increasing salience of communication itself suggests that the mobile phone may provide an additional channel for performing intimacy.

Rather than conveying specific information, in many cases the mobile phone call itself may be constitutive of the relationship. Keeping in touch while physically apart is a marker of intimacy. If constant connection is the main quality afforded by mobile modalities, then might not this property be also allowing intimacy at a distance? In order to gain some insight into this possible use, we asked respondents: 'If you and your partner are routinely apart for more than a day at a time, how important is the mobile phone in maintaining the quality of your relationship?' and invited them to respond on a five-point scale ranging from 'very important' to 'very unimportant'. Approximately three-quarters of both men and women considered the mobile phone to be either very important or important in maintaining the quality of their relationship while geographically separated.

Conclusion

To date, research on the mobile phone has typically taken the form of either small-scale qualitative studies, or broad quantitative studies based on distal indicators (such as the number of mobile phone services or handsets per head of population), or simply an analysis of attitudes towards the device. The strength of our study is in gathering large-scale and representative data on the nature and timing of mobile calls. This is especially important in an era where ICTs are seen as the motor of significant social change. Our phone logs reveal who is making calls, the purposes of calls, and the precise time of the call. In conjunction with the survey data, this gives us a more detailed picture of the mobile phone habits of the Australian population than has been previously available. This allows us to make judgements about which theories are consistent with these data and which do not receive support from our findings.

Much of the contemporary controversy over the impact of the mobile phone has been about how it encourages the blurring of the boundaries between home and work. The main concern has been work extension, arguing from the properties of the machine via 'constant availability' to the idea of uncontrollable work-family spillover; that is, the intrusion of work into the times and spaces reserved for personal life. The phone simply summons the worker to work, while at home.

Our results demonstrate that the mobile phone is not primarily a work extension device. The volume of work-related traffic outside of hours of employment is low and the main uses of the mobile are for contacting family and friends. The mobile is not even a device that ameliorates the strains associated with balancing work and family. Job characteristics are far more influential than mobile phone use for both work to family and family to work spillover. However, the timing of calls supports the idea that the mobile phone affords a new, flexible form of coordination – microcoordination.

The survey results consistently show that connecting with significant others is the predominant reason for call traffic and work uses are, by contrast, a far less influential part of the flow of communications. Without knowing the actual content of calls, data on the timing and purpose of calls are consistent with the use of the mobile phone for household coordination. It seems that the mobile phone significantly increases people's capacity to maintain intimacy at a distance and over the course of the day. Similarly, we have argued that both the questionnaire and the log data suggest that maintaining contact via short calls (phatic communication) plays a role in sustaining intimate relationships when those calls are between family members. This capacity for perpetual contact gives rise to new forms of intimacy, such as forming, deepening and dissolving relationships via SMS messages and enhancing the ability to be communicatively present while being physically absent.

The methods we have employed cannot tell us the specific content of calls, that is, the actual conversations that took place and, consequently, are limited to the extent that they describe the nature of intimate communication and the quality of contemporary relationships. Our study offers support for the proposition that communication is central to contemporary practices around intimacy, and it suggests that women's calls may in part signify their responsibility for emotional work. However, it does not allow us to disaggregate abstract categories such as 'family' and 'friend' and study how people in widely diverse personal relationships represented by these labels actually use the phone. Structural inequalities between couples and between parents and children suggest that there will be a wide variation in how apparently similar calls are interpreted. Moreover, a single mobile call may have multiple functions, serving a range of purposes that are extremely difficult to categorize. Qualitative research on mobile phone communication between parents and teenage children, for example, shows that children may experience mobile calls as a form of control and surveillance (Ling and Yttri, 2006). Further research on mobile conversations will enable a more thorough examination of issues such as the interpersonal

consequences of perpetual contact. It is hoped that our research will provide some impetus towards more nuanced and interpretative research on the role of mobile communications for the multifaceted and contradictory components of intimacy in the future.

The data presented here suggest that mobile phone owners maintain control over what passes through the boundary separating work and personal life, choosing when to switch off their phone, when to allow messages to accumulate in message banks and whether to leave the phone behind. In relation to the control of the flow of communication, respondents are most careful not to disturb strangers (for example, in the cinema and restaurants) or colleagues at work meetings. However, they are more relaxed about communicating at times reserved for family solidarity. Perhaps this is because the phone is so closely associated with a deepening of connections with significant others that there is less need to control the flow over these temporal boundaries. Indeed, it may be that people positively welcome the softening of the boundary between home and work afforded by new communication devices because, rather than fearing work intrusion, they are seeking deeper contact with family and friends. While the work-extension thesis emphasizes the dissolution of spatial and temporal boundaries, the connected presence conception draws our attention to the social practices that constitute and maintain a private realm for affective relationships among family members and friends. This novel development reinforces the relational nature of family practices, de-emphasizing domestic co-location and creating families without borders.

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