EMPIRICAL RESEARCH

Mobile information systems and organisational control: beyond the panopticon metaphor?

Aurélie
Leclercq-Vandelannoitte[1],
Henri Isaac[2] and
Michel Kalika[2]

[1]IESEG School of Management, LEM CNRS, Lille, France; [2]PSL- Université Paris-Dauphine, Dauphine Recherches en Management, CNRS UMR 7088, Paris, France

Correspondence: Aurélie Leclercq-Vandelannoitte, IESEG School of Management, 3, rue de la digue, Lille 59000, France.
Tel: +33 3 20 54 58 92;
Fax: +33 3 20 57 48 55;
E-mail: a.leclercq@ieseg.fr

Abstract

With their ubiquity, mobile information systems (IS) may be used in ways that challenge the dynamics of organisational control, forcing IS scholars to revisit the panopticon metaphor and possibly offer new conceptual tools for theorising about information technology (IT)-based organisational control. Yet little IS research has offered critical reflections on the use of the panopticon to represent the control potential of mobile IS. This study investigates whether the way mobile IS are engaged in the workplace reinforce panoptic control systems or generate other types of control logics, requiring another conceptual lens. A qualitative exploratory case study investigated a consulting company whose professionals equipped themselves with mobile IS. The study reveals the emergence of a subtle, invisible form of 'free control' through mobile IS. Although consultants are mobile, flexible, and autonomous, a powerful communication and information network keeps them in a position of 'allowed subjection'. Free control is characterised by a shift in the location of authority, a time-related discipline, a deep sense of trust, and adherence to organisational norms that the professionals themselves co-construct. These characteristics, which render such control even more pernicious than panoptic arrangements, deserve more attention in further IS research.

Introduction

Our goal in this paper is to explore organisational control in the context of mobile Information Systems (IS), since the latter may be enacted in ways that challenge the way firms manage and control people (Munro, 2000; Martinez, 2010). The properties of mobile IS offer both continuity and discontinuity, in contrast with other generations of IS. Their communication capacities (connectivity, portability) (Mazmanian, 2013) provide means to perpetuate certain practices and management methods, such as task allocation, process standardisation, and activity control (Beniger, 1986; Zuboff, 1988; Kallinikos, 2005); but their liaison opportunities also pave the way for new means of communicating, exchanging information, working, and managing, beyond traditional corporate space–time frameworks (Prasopoulou *et al*, 2006; Hislop & Axtell, 2011). By calling into question shared contexts of activity, mobile IS may be enacted in ways that affect the very foundations of collective action and reshape the established order of social interactions (Cousins & Robey, 2005; Prasopoulou *et al*, 2006). Work, management, and control seem directly affected by the various ways in which people engage mobile IS (Robey *et al*, 2004). Management is no longer confined to company premises but potentially can exert influence anywhere, anytime, even in unexpected contexts. More traditional fixed-line

telephony already allowed workers to operate away from company premises; the properties of mobile IS and the way they are put into practice have considerably extended this flexibility and revolutionised the traditional time–space boundaries of organisations (Scheepers *et al*, 2006). The ways mobile IS are enacted thus obviously raise new concerns about control issues and present opportunities for IS researchers to revisit fundamental assumptions related to panoptic control systems.

However, the prevalence of mobile IS has not led to corresponding challenges in the fundamental assumptions embedded in classical IS theories (Middleton *et al*, 2011), especially those related to management and organisational control. The Foucauldian view of the panopticon metaphor has stimulated IS researchers to study the relationships between modern IT and the mechanisms for monitoring and normalising modern organisations (Zuboff, 1988; Poster, 1990; Sewell & Wilkinson, 1992; Lyon, 1993, 1994; Webster, 1995; Sia *et al*, 2002; Elmes *et al*, 2005). Foucault (1977) indeed uses this metaphor (Bentham, 1787/1995), as a prison design, to represent the disciplinary power of information technology (IT). The particularity of this architecture is that observers can watch all prisoners without the prisoners being aware of that observation, such that the final objective is for the inmate to internalise the mechanism of surveillance that the building establishes (Foucault, 1977; Leclercq-Vandelannoitte, 2013). Similarly, technology has allowed for the deployment of panoptic structures invisibly throughout society, as shown by the comparison of modern IT with 'electronic panopticon' (Poster, 1990). Computer-based technologies make work more visible (Zuboff, 1988), because they record statistics about work performed while also increasing the capacity for invisible monitoring of personal details. Like in the Foucauldian panopticon, surveillance can be instaneous and constant in the computer age (Zuboff, 1988). It is thus difficult to find a publication on control and computer-assisted work that does not use, implicitly or explicitly, a Foucauldian approach (Viera da Cunha *et al*, 2012). However, what has long been insightful in the context of fixed IS must now be questioned in the context of mobile IS: Beyond the fixed systems deployed in bounded environments controlled by organisations, mobile IS may be enacted in ways that dissolve organisational boundaries, blur professional and personal time and space, challenge classical adoption logics, and redefine the very use of IS. Thus we must ask, can control systems in the mobile age be reduced to the Foucauldian panopticon, or does the advent of mobile IS herald the need for another model of social and political organisation? Does the enactment of mobile IS in the workplace support an extension of panoptic IT-based control systems, as might be enabled in enterprise systems, or does it induce other logics of control?

In a context in which issues of surveillance and privacy come increasingly to the forefront of public debates (Lyon, 2007), such questions are of substantial importance for IS researchers, who need to question the nature of control in the mobile age, why it occurs, and with what effects. This effort is important because mobile IS are often associated with and legitimised by professional discourses and practitioner studies about liberty, emancipation, autonomy, empowerment, and the transparency of information (Arnold, 2003; Harmon & Mazmanian, 2013). However, mobile IS also might be enacted in organisational contexts in ways that induce different control logics that are not directly identifiable or visible, in contrast with the well-known Big Brother figure. These questions become even more crucial in light of an emerging but growing view in sociology and accounting literature that questions the ability of the panopticon metaphor to inform analyses of contemporary control systems (Haggerty & Ericson, 2000; Munro, 2000; Lyon, 2007; Martinez, 2010; Brivot & Gendron, 2011). Caluya (2010) and Doyle (2011) question an excessive reliance on the Foucauldian panopticon metaphor as a default framework for theorising about practices of surveillance. From a sociology view, Lyon (2007) also suggests that other approaches could shed more light on surveillance phenomena at the societal level. Although Haggerty & Ericson (2000, p. 607) predict that rapid technological developments 'require [researchers] to rethink the panoptic metaphor', IS research has not done so. Our objective is to fill this gap. The mobile age indeed forces IS scholars to revisit the panopticon metaphor and their fundamental assumptions about IT-based control systems, as well as offer a new set of conceptual tools to theorise about the latter. Considering the power of metaphors for making sense of organisations (Weick, 2001), such theorising is particularly critical. 'Metaphors are not only interpretive constructs of ways of seeing; they also provide frameworks for action' (Morgan, 1986, p. 343).

Next, we provide an overview of the relationships between IT-based control and the panoptic metaphor. We discuss the main properties of mobile IS that may challenge the view of the panopticon and highlight the potential of new forms of discipline achieved through mobile, flexible control logics, which we designate 'free control'. We then present our research method – an in-depth analysis of a business case. We question the panoptic metaphor through a qualitative exploratory case study of a consulting company, in which professionals use mobile IS to perform both professional and personal activities. Finally, we discuss the findings of this study and offer several conclusions.

Literature review

A panoptic view of IT-based control

Organisational control helps ensure that organisational actors behave in ways that lead to the attainment of organisational objectives. Control reflects 'the effort exercised by managers, not just to collect and share information, but also to use information for directive purposes with their units: the aim is to encourage or provoke a general reaction from the people who report to them'

(Mintzberg, 1994, p. 17). This definition focuses on the informational dimension of organisational control, enabled through data storing, processing, and analysing. Given their capacity to save, store, and analyse information flows, IT and IS play significant roles in control systems (Zuboff, 1988).

Specifically, IT can be enacted in ways that increase the scope and reach of workplace surveillance, scrutiny, and monitoring (Poster, 1990; Sewell, 1998). IT generate data about work practices and provide greater availability of information in organisational settings, which makes workers more visible. They enable the development of a 'superstructure of surveillance', such that managers can scrutinise all employee activities and analyse individual work tasks (Poster, 1990). In turn, the knowledge produced about individual employees can be classified, categorised, and measured (Townley, 1993; Sewell, 1998). Because this control is often unnoticed, the superstructure instils a deep sense of self-discipline among organisational actors (Elmes *et al*, 2005), directly alluding to the metaphor of the panopticon (Sewell, 1998).

Bentham's (1787/1995) panopticon prison design, which directly inspired Foucault (1977), featured a central tower in a circular building, divided into individual cells. The panopticon is based on the organisation of bounded enclosures, or divisible, observable, calculable spaces. Prisoners have no idea whether they are being watched; they are painfully aware though that they are being observed, so the persistent visibility of the guard tower, combined with uncertainty about when they might be watched, encourage internalisation of a disciplinary gaze. The panoptic architecture scrutinises behaviours to identify abnormalities, compare individual performances, and induce normalisation. Its overarching goal is to induce self-discipline in prisoners, whose behaviour becomes constantly observable. Ultimately, the prisoners become self-disciplining participants, because of their expectation that any act of disobedience can be seen, revealed, and sanctioned. The panoptic metaphor conveys the sentiment of invisible omniscience and encourages self-discipline (Foucault, 1977), to the point of rendering the physical presence of watchers all but redundant (Brivot & Gendron, 2011).

In an effort to designate the potential for centralised surveillance, prior IS research has considered the panoptic metaphor as archetypal of IT-based social control (Willcocks, 2004). A parallel has been drawn between the panoptic metaphor and the intensification of surveillance through the application of a wide range of IT in society: surveillance technologies (Lyon, 1993, 1994), information and databases (Poster, 1990), enterprise systems (Sia *et al*, 2002; Elmes *et al*, 2005), inter-organisational systems (Webster, 1995), and discipline and technologies at work (Zuboff, 1988). The enactment of modern IT into organisations introduces a 'panoptic gaze' over individual employees (Sia *et al*, 2002), as shown by the emergence of an 'information panopticon' (Zuboff, 1988), in which IT supports the potential for continuous surveillance.

Observing the accelerated development of databases, with the concept of a 'superpanopticon', people continuously produce surveillance data through their daily use of IT (Poster, 1990). Furthermore, because employees know that their actions are more visible to others through their use of various technologies, they engage in self-discipline and self-control (Elmes *et al*, 2005). Most technologies are not designed primarily for surveillance, but they can be engaged in ways that increase the potential for control (Brivot & Gendron, 2011) and enable classifying, organising, and constructing reality (Willcocks, 2004).

Although the panoptic metaphor has been used primarily to explore the control potential of automation technologies or enterprise systems, based on the search for productivity (Poster, 1990; Webster, 1995; Sia *et al*, 2002; Elmes *et al*, 2005), recent IT developments have reinforced the concept of a control revolution (Beniger, 1986); that is, the use of more powerful IS enables employers to monitor employees inexpensively and easily (Sewell & Wilkinson, 1992; Weckert, 2005). According to De Saulles & Horner (2011), mobile technologies are often engaged in ways that extend the panopticon principle, which they term the 'portable panopticon' – characterised by its mobility and use in both private and public spaces. However, the ways mobile technologies are enacted also give a new twist to the panoptic metaphor, in that they enable people to turn the gaze of surveillance back at the establishment (De Saulles & Horner, 2011). Different local–remote control configurations might emerge from mobile IS use through the multiple sources of control and contradictory motives that play into mobile computing actions (Wiredu & Sorensen, 2006). Moreover, various trajectories of use might emerge from the way people engage mobile IS in practice, which lead people either to expand permanent accessibility, constant connectivity, and social control or to circumvent this trap (Mazmanian, 2013). They might invoke various tactics of personal choice or personality when accounting for relationships with mobile devices that manifest total connectivity and availability to the workplace (Mazmanian, 2013; Mazmanian *et al*, 2013). Considering the specificities of mobile IS, and the simultaneous continuity and discontinuity they offer with other generations of IS, we assert it is time to investigate the emerging logics of control enacted with and through mobile IS.

Mobile IS properties that challenge the panopticon

Mobile technologies have rapidly become communication support systems for processing, sharing, storing, and analysing data, linking all the members of a business organisation, regardless of time and place. They provide workers with almost permanent access to a company's IS, contributing to the development of mobile IS. Within the vast scope of mobile IS (Lyytinen & Yoo, 2002), we focus particularly in this research on the use of mobile phones, laptops, personal digital assistants (PDAs), smartphones, and tablet PCs linked to networks that encompass multiple

information resources. They comprise the 'network of interconnected technological, social and organizational elements' (Lyytinen & Yoo, 2002, p. 377) that enables mobility that is both physical and social for the players involved (Kakihara & Sorensen, 2002). Do the specific properties of mobile IS and the way they are enacted in practice challenge the relevance of the panoptic metaphor in understanding contemporary forms of organisational control? To answer this question, we examine four inter-related aspects in greater depth.

From a subdued prisoner to a voluntary participant
Mobile IS challenge the traditional roles and behaviours of the panopticon's observer – prisoner roles. Mobile users' behaviour differs decidedly from how people interacted with computers a decade ago (van der Heijden & Junglas, 2006). Since their launch in the mid-1980s as expensive executive tools, mobile technologies have become standard, pervasive communication devices, giving birth to mobile IS (De Saulles & Horner, 2011). As a result of the lowered knowledge barriers, decreased cost, and wider availability of both mobile devices and telecommunication networks, many people now demand the use of mobile IS in both private and professional contexts, blurring the boundaries between work and home (Middleton & Cukier, 2006; Scheepers *et al*, 2006; Hislop & Axtell, 2011). They are now fashionable accessories, subject to a contagion effect, such that people adopt, use, and ask for them on their own. Many people carry powerful mobile devices with them at all times; a seeming addiction to mobile devices is prevalent as a cultural phenomenon even among professionals (Mazmanian *et al*, 2006; Middleton & Cukier, 2006). Thus, mobility has become an expectation of users, who are willing to access their companies' IS regardless of space and time. Unlike other systems deployed in organisational settings, such as enterprise systems or organisational databases, mobile IS have revolutionised classical IT adoption logics, span business and personal uses, and permeate whole societies (Lyytinen & Yoo, 2002). Therefore, unlike IT-based panoptic arrangements, which have long been initiated in companies by a superior hierarchical authority without the consent of those being controlled, mobile IS are frequently introduced, adopted, and demanded by the employees, who are not necessarily aware of their potential for control.

From hierarchical surveillance to distributed control
The direction and nature of surveillance are also challenged by the use of mobile IS, because their properties enable more distributed control. A collection of actors with various goals interact through mobile IS and perform indirect surveillance of one another's activities. Although Foucault's (1977, p. 200) view of the panopticon considered the individual 'the object of information, never a subject in communication', the use of mobile IS implies that people are not passive objects of information but rather active participants in constant interactions and communication

flows (Munro, 2000). Conversely, the panoptic metaphor does not reflect the mutual influences, interactions, and reciprocal gazes (Haggerty & Ericson, 2000) that individuals exert on one another through mobile IS use (Brivot & Gendron, 2011). Unlike the panopticon, which relies on the power of a few observers over the many through top-down scrutiny, mobile IS provide a more 'rhizomatic assemblage' of surveillance based on multiple and lateral relationships (Haggerty & Ericson, 2000; Brivot & Gendron, 2011; Doyle, 2011; De Saulles & Horner, 2011). Drawing on Deleuze & Guattari's (1987) notion of 'rhizomes' – officially, plants that grow through interconnected root systems (Haggerty & Ericson, 2000) – rhizomatic assemblages imply that individuals, groups, organisations, and governments are continuously involved as both agents and targets of surveillance (Brivot & Gendron, 2011). For example, De Saulles & Horner (2011) note that protestors in demonstrations can use mobile phone cameras to record inappropriate police activity while they are also being filmed by the police. Mobile IS thus reject the image of an omnipotent Big Brother (Haggerty & Ericson, 2000; Martinez, 2010) and instead rely on more subtle forms of distributed and indirect control, based on continuous interactions and communication flows with other connected people.

From an enclosed physical prison to potential virtual unbounded control
The spatio-temporal framework of IT-based control might evolve as a result of the first two properties. Mobile IS further offer unprecedented possibilities to access, manipulate, and share information on the move (Cousins & Robey, 2005). Their properties provide the possibility to extend the spatio-temporal framework of organisations, because people can access their work environment, such as their company's data, servers, applications, and management IS, beyond classical boundaries. For example, they facilitate access to the company's enterprise systems, such as inventory and customer relationship management, and to productivity tools, such as e-mail and scheduling (Cousins & Robey, 2005). Mobile IS use thus transcends company boundaries (Scheepers *et al*, 2006; Hislop & Axtell, 2011). It helps reconstruct the relationship between time and space (Prasopoulou *et al*, 2006), reflecting the emergence of a form of 'multicontextuality' (Henfridsson & Lindgren, 2005). Mobile IS can be experienced, adopted, and used both at work and at home (Scheepers *et al*, 2006; Hislop & Axtell, 2011), such that engagement in practice is often characterised by an anywhere, anytime connectivity (Cousins & Robey, 2005). However, such ubiquity implies that control is less bounded to specific territories (e.g., companies' physical boundaries), and visibility is no longer limited to real-time monitoring of behaviours. Unlike the panoptic architecture, which relies on enclosures to scrutinise individuals, monitoring and control in the mobile age are not specific to geographical or temporal enclosures (Brivot & Gendron, 2011). Recent studies in organisational theory

argue that the meaning of enclosures thus is less obvious (Martinez, 2010; Brivot & Gendron, 2011). The 'super-panopticon' concept (Poster, 1990) already focuses on the possible extension of the reach and scope of hierarchical surveillance, by showing that geographical and physical enclosures of the panopticon become unnecessary with the power of new IT. Mobile IS may be experienced as an 'electronic leash' that extends far beyond organisational boundaries (Jarveenpa & Lang, 2005; Middleton & Cukier, 2006; Wiredu & Sorensen, 2006). The demand that workers provide almost permanent availability and urgent responsiveness seems to have developed alongside the use of mobile IS (Robey *et al*, 2004; Cousins & Robey, 2005; Mazmanian *et al*, 2005, 2013), though recent research adds nuance to this concern by showing that mobile IS do not inherently lead to greater expectations of availability in the workplace (Mazmanian, 2013). With these rapid technological changes and the various ways in which mobile IS enter into daily practice, management control seems to have yielded to more flexible and mobile control logics.

From unilateral constraints to dialectics of control and autonomy   The enactment of mobile IS in organisational contexts presents a dialectic of autonomy and control (Arnold, 2003; Middleton & Cukier, 2006) that did not exist in prior panoptic arrangements. The latter gave almost no freedom to individuals (Foucault, 1977), contrary to the representation and experience of mobile IS as instruments of autonomy and control. A paradox emerges, in which the properties of mobile IS form particularly equivocal tools in relation to hierarchical relationships and control (Arnold, 2003; Cousins & Robey, 2005; Jarvenpaa & Lang, 2005; Middleton & Cukier, 2006; Mazmanian *et al*, 2013). Mobile IS's capabilities provide a new form of flexibility (Varshney, 2003) and offer promising opportunities for both businesses and individuals (Middleton & Cukier, 2006), including immediate access to information, greater productivity, fewer work constraints, and reduced coordination costs (Robey *et al*, 2004). However, companies can simultaneously engage in 'digital traceability' (Robey *et al*, 2004), which can generate stress and raise issues related to the breakdown of barriers between private and professional life (Cousins & Robey, 2005; Prasopoulou *et al*, 2006; Hislop & Axtell, 2011). In this paradox, mobile IS offer both more freedom and increased servitude (Jarvenpaa & Lang, 2005; Wiredu & Sorensen, 2006). Although mobile IS may be engaged in ways that promote flexible, responsive, dynamic organisations and non-bureaucratic control systems, they also might be used as tools that reinforce control, availability demands, and employee traceability. They can be experienced as tools enhancing the independence and mobility of the workforce, but their use can also preserve the 'hierarchical line', even beyond company boundaries. According to Mazmanian *et al* (2013, p. 2), an 'autonomy paradox' emerges from the use of mobile IS by professionals, which both increases their autonomy (by allowing

them to work anywhere, anytime) and diminishes it (by catching them in a spiral of escalating engagement, such that they work everywhere and all the time), producing contradictory, unintended consequences.

From panoptic to 'free' control

The general tendency in IS research is to offer more and more examples of creeping panoptic surveillance (Haggerty & Ericson, 2000), yet engagement with mobile IS in organisational practices also is revolutionising the dynamics of management control, providing IS researchers with opportunities to revisit the panoptic metaphor and possibly offer a new set of conceptual tools to theorise about management control systems. In particular, we assume that the use of mobile IS in organisational contexts can open more mobile, reticular, and flexible control logics, which we designate 'free control'. The concept of free control echoes the idea of a shift from disciplinary societies to what Deleuze (1992, p. 174) calls 'control societies' that 'no longer operate by physically confining people but through continuous control and instant communication, enabled by developments in material technologies'. Unlike disciplinary societies characterised by panoptic arrangements, control societies are based on the elimination of physical enclosures and a free-floating control facilitated by the development of modern IT. The construct of 'free control' suggests that the ways mobile IS are enacted in organisational contexts may challenge the basic dimensions of control (its nature and devices, the observer-observed relationship and location of authority, the individual's role in communication and direction of control, its spatio-temporal framework, and underlying principles). Our goal now is to specify each of these dimensions, by questioning the logics of control that are enacted with and through mobile IS, which seem to go beyond simple panoptic arrangements.

Research method

Research design

We adopted an exploratory, contextualised, interpretive research approach (Walsham, 2006), which is particularly useful for achieving a deep understanding of a specific phenomenon. We developed a qualitative exploratory case study, which provides rich and solidly founded descriptions and explanations of a process anchored in a local context (Miles & Huberman, 1994). We drew on empirical data collected in 2008 from a consulting company – which we refer to as Bankco, to protect its confidentiality – in which mobile professionals, who usually work outside the office in client companies, were expected to use mobile IS to perform their activities. The consulting field seems particularly interesting in relation to our objectives, because management must address specific issues, including the tensions between autonomy and control, the boundaries between professional and personal lives, and the development of an organisational environment favouring the consultant's loyalty to the distant company.

This French consulting company was founded in March 2001 and located in Paris; Bankco specialises in strategy and bank marketing. It has maintained a leadership position in this highly focused, young, and dynamic market, characterised by strong demand linked to the growth of banks. Bankco competes with both larger consulting companies and smaller companies that specialise in banking strategy. Its core business involves knowledge and information management, based on services delivered by consultants who are experts in strategy and bank marketing. At the time of our study, Bankco was small, with clients mainly located in the Parisian area and the north of France. It employed 25 consultants, with diverse experience, ages (29–49 years), and profiles. To distance itself from its competitors, Bankco strived to deliver high-quality services to clients at a lower cost than other companies. Projects were team based, headed by a manager or associate; each team comprised both junior and senior consultants, who collaborated on a daily basis to complete projects successfully.

To support coordination at a distance, the company dematerialised all its processes (from pay slips to reporting) and was a fervent supporter of a 'zero paper' office. All consultants (associate, seniors, and juniors) were equipped with Wi-Fi laptops. However, as many of them explained, it was very difficult to connect to their client's network; for security reasons, client companies (i.e., banking institutions) did not allow consultants to link to their local network, which prevented consultants from accessing their company's data and e-mails. Consultants therefore turned to other mobile technologies, such as sophisticated mobile phones, PDAs, and smartphones, to be connected everywhere and not have to depend on their client's network. At the time of this study (2008), all consultants had been using mobile technologies to perform their daily activities (e.g., sophisticated mobile phones, PDAs, smartphones) from 6 months to 2 years. Such devices were quite common for mobile knowledge professionals and had started becoming more accessible in society as a whole. In 2007, the company developed its own server, including a client database, a small customer relationship system, and diverse applications (reporting, time billing, holiday), as well as productivity tools such as e-mail, shared agendas, scheduling, and a knowledge-based system with shared files. The consultants could access this system at distance, through the mobile technologies with which they were equipped, and thereby keep track of their client visits, follow up with clients, and reach their peers. This set of personal and professional mobile devices, systems, networks, and applications constituted a transparent, convenient mobile IS, providing consultants with access anytime and anywhere to organisational resources, even as they moved from place to place.

Data collection and analysis

We collected different types of data to ensure triangulation, in the context of a one-year, in-depth, longitudinal case study. The primary data consisted of semi-directive interviews and field observations. First, we conducted 18 semi-structured interviews with different levels of respondents (Table 1). Each 60- to 120-min interview was conducted at the company's headquarters, on clients' sites, or in public or personal spaces the interviewees used for work, to better understand their real work conditions. Each interview covered open topics linked to their activity, the requirements of their mission, the nature of their projects, and their relationships with clients. Other questions focused on organisational, managerial, and relational aspects, as well as the role of mobile IS in such interactions. Additional questions focused on the reasons for mobile IS adoption, the potential changes its use brought, and its effect on relationships with managers, peers, and clients; we strived to grasp the daily uses of mobile IS and their effects on modes of management and control systems, work practices, organisational structures, and professional and private lives. Our aim was to obtain a rich description of mobile IS use to understand the potential new forms of management and control that might emerge, with and through mobile IS enactment. We wanted to determine how they contrasted with or resembled known panoptic IT-based control systems.

Second, over this 1-year study, we conducted a 30-day observation of five consultants at several points in time, to enrich our analysis (Table 2). We took notes each time a consultant used mobile devices, recorded how he or she interacted with others (e.g., e-mail, oral conversation), and documented the number and length of the interactions. We also asked these consultants to report and explain each time they used mobile devices for professional reasons beyond typical work hours (e.g., evenings, weekends). Secondary data included internal documentation, meetings, and press reviews.

We developed our qualitative analysis from an abductive logic (Baskerville, 1999), characterised by both deductive

Table 1 Interviews at Bankco

Job categories	Number of respondents
Junior consultants	7
Senior consultants	6
Associates	4
CEO	1
Total	18

Table 2 Observation days at Bankco

Consultants under observation	Gender	Number of days of observation
Consultant junior 1	Male	6
Consultant junior 2	Male	5
Consultant junior 3	Female	4
Consultant senior 1	Male	9
Consultant senior 2	Male	6

and inductive principles: We identified a *priori* the main topics, but other topics also emerged from the transcriptions, enabling us to consider new ways to conceptualise mobile IS's effects on organisational control. To ensure validity, we tape-recorded and fully transcribed the interviews. We employed double-coding to check the reliability of our analysis. The interviews were subjected to a rich qualitative thematic analysis, using Nvivo software. We identified three major categories, each of which included several themes ('nodes') and dimensions: mobile IS adoption (i.e., consultants' self-equipment with mobile IS); impacts on the organisation and managerial relationships (i.e., flexibility, autonomy, trust and involvement); behaviours and uses (i.e., purposeful self-disclosure, non-stop work and continuous availability). Our content analysis helped us specify the dimensions of the new form of control that emerges with mobile IS use (i.e., 'free control'), and to compare them with the main characteristics of panoptic control.

Results

Consultants' self-equipment with mobile IS
Consultants worked in an environment characterised by fierce competition. A general ambient discourse conveyed the idea of 'urgency' and 'hyper-reactivity', as revealed by the terms used by the CEO and managers, which revolved around the ideas of 'time pressure', 'time management', and 'time optimisation'. In this context, time provided a 'key strategic resource that every consultant has the duty to manage at best', as one manager noted. Clients were charged a fixed rate, and consultants were expected to increase their efficiency to gain time and money. Thus, their time had to be efficiently managed, and collaboration among consultants was encouraged. Instead of providing junior and senior consultants with a full suite of mobile IS though, Bankco equipped them only with laptops. As with most consulting companies, Bankco did not have any formal policy regarding the deployment of mobile IS for consultants. In contrast, the firm provided mobile devices (e.g., PDA, smartphones) to associates, who spent most of their time in the office. As most consultants highlighted during the interviews, the problem with such a deployment was that most of them, who worked at client locations, could not connect to their client's network with their prescribed laptops for security reasons, and thus they had difficulty accessing Bankco's IS and client database, reporting to their managers, sharing documents, and even just checking their e-mails. Responsiveness and customer satisfaction represented key performance measures in the consultants' jobs. Thus, they determined that mobile IS use was a necessity, but they were left to find their own equipment for professional purposes. Many consultants shared the view, as expressed by one, that 'without their personal devices, the stress of not being always reachable and connected would increase'. As a junior consultant explained, 'The mobile phone is never supplied to junior consultants…. I use a personal PDA that I've bought for

me: I manage everything from this technology in real time'. A senior consultant added, 'I have to be reactive and available for my clients, so I decided to invest in a smartphone to get in touch with my clients, to make phone calls or receive e-mails'. As a result, by mid-2008, all consultants had bought personal mobile devices to perform their daily work activities, access the company's mobile IS, and improve their job performance. They took the initiative to equip themselves with mobile devices that would both give them more autonomy and link them more closely to the company and its resources.

Toward an agile and flexible organisation, based on trust and consultant involvement
In this context, consultants increasingly were allowed to work outside the office. To increase efficiency, optimise time, and reduce office costs, the company had moved toward an agile and flexible organisational form. Whereas consultants used to go to the office several times a week to meet their team members and managers, management progressively encouraged them to work from home. As the CEO mentioned, 'Now that these technologies exist, everybody can work away from the office…. We dematerialise a maximum of things, of information, so people can access them at a distance very easily thanks to their personal technologies'. An associate expanded this idea: 'We decompartmentalise the organisation; we really expect it to be more and more flexible, mobile, and efficient. With these technologies that everybody now has and use, such an organisation has become possible'. Consultants appreciated the flexibility to work outside the office, which provided them personal autonomy and time optimisation linked to mobile IS use and offered them the freedom to work anywhere. As one senior consultant stated, 'We can really organise ourselves as we want. We have a complete autonomy with these tools, we can do several things simultaneously, and lead several lives'. Some consultants also recognised the abilities to balance their professional and private lives better, as well as decide on their own how to manage their time. As one consultant explained, 'I can stay home but work as if I was at the company'. Another added, 'With this organization and these mobile technologies, I can mix personal and professional uses of time, for example, to make personal phone calls during the workday or to continue working for the company in the evening after my children go to bed'.

Such an organisational structure was allowed because of the deep trust that seem to characterise managerial relationships; management reported 'trusting' consultants to stay engaged in workand the consultants apparently benefited from a sense of freedom. The CEO claimed that the company was characterised by 'an extremely flat management system', typified by a supposed 'absence of control' and 'a relationship of trust': according to him, 'Consultants are very responsible; there's no need to manage them'. At first sight, the notions of trust, confidence, and reliability seem to be the heart of interpersonal

relationships. On the one hand, management discourse revolved around the idea that 'the company could rely on consultants to be completely committed to work, even at distance', as stated by the CEO; on the other hand, consultants 'appreciate the trust that managers put in them', according to a junior consultant. A management-by-objectives system applied, so that control was focused on 'deliverables' (services provided to customers).

Moreover, mobile IS were enacted by both consultants and managers in ways that built and reinforced trust. The mobile IS that accompanied the consultants proved that people did not need to be physically present to work together and pursue their objectives. Some managers related the trust they had in consultants' engagement in work to the metaphor of 'visibility' over the consultants' work, enabled by the permanent connection of consultants with the company. A manager recognised: 'consultants and managers rarely physically see each other, and there's no need to do otherwise since we are all connected to each other', before adding, 'I have trust that they will always try to do their best, even beyond my own expectations'. Furthermore, 'I know what consultants in my team do without seeing them', stated one manager, adding, 'even if they are alone, they are never alone. We follow each other from a distance'. Clients, peers, and managers all maintained indirect control over consultants' activities, largely due to the information network that linked the consultant to the company and objectives. Service delivery to clients meant immediate information feedback from client to associates and managers. As one associate explained, 'Clients are a key leverage in the consultant's activity, especially with the prevalence of mobile IS. They have the phone numbers of our consultants, of managers as well, and they don't hesitate to pester us anywhere, anytime. These technologies imply such reactivity that we immediately know how things are going'.

Moreover, teamwork constituted an important activity among peers, which had been considerably reinforced through the use of mobile IS. The projects on which consultants and associates were collaborating required continuous exchanges of information and constant communication, which mobile IS tended to reinforce. Thanks to the shared client database and files, which consultants could access at a distance any time, the nature of collaboration and time allocation spent on projects evolved substantially: The group generally decided to go on working on projects without interruption, thanks to their mobile IS, such that consultants took over for one another until the project was finished. Some explained that they generally worked like a virtual team, at a distance from one another but connected through their mobile IS, whether on evenings or weekends, to finish projects that already had been initiated. For example, our observation of a team of junior consultants revealed that they subjected themselves to intense self-discipline, driven by time pressure, which enabled them to finalise projects earlier than expected by their manager. A junior consultant explained, 'without these technological advances, it wouldn't be

possible to have such an organization and to be so efficient'. One of his colleagues further noted: 'I don't regret at all to have bought personally this equipment, in the sense that it enables me to be more productive and to satisfy my manager'. As recognised by the associate who supervised them, 'I know they work at their maximum, they strive to do their best.... Now everybody can be connected to each other and can be linked to the company's resources. These technologies are an inestimable progress to increase the efficiency of the whole team'.

Consultants' purposeful self-disclosure through mobile IS use

Our observation revealed that no one wanted to be considered a 'weak link', as one consultant noted, so that mobile technologies were used at their maximum, even beyond the company's implicit expectations. Mobile IS were enacted by consultants as tools to reinforce both their commitment and the trust the company had put in them. For example, some junior consultants used mobile IS as 'proof' to show their involvement with and loyalty to the company, by working at a distance on shared files beyond the classical workday hours to finish projects earlier than expected, or by showing managers they remained on call in the evenings and on holidays. Our observations revealed hidden but intense competition among consultants, which mobile IS helped create and continuously reinforce through shared behaviours and emulation.

For example, fearing that his personal contribution would not be rewarded at its fair value, a junior consultant began sending e-mails late in the evening or on weekends and holidays. Similarly, desiring to receive more recognition from their company, some consultants tried to increase their visibility by showing more reactivity and productivity (through an increase of the number of projects dealt with in a certain period of time, via the intensification of work hours outside the classical workday hours). Our observation underscored the role of consultants in producing, through mobile IS use, the representations that the associates used to assess their work. Consultants legitimated their work through specific uses. That is, they engaged in purposeful self-disclosure of their activities. Because of these actions and to justify their commitment, the remaining consultants adopted the same practices: 'I'm working at home and I can't afford not being always connected. Reactivity is an integral part of my job, and I don't want people to think that I'm not working if I don't reply immediately when somebody sends me an e-mail or calls me'. In the same way, another consultant mentioned: 'I have access anytime and any-place to the company's resources, such as the clients' data and the different projects.... We can really work anywhere and anytime. Moreover, my mission is to optimise time: so it's completely normal to go on working until we are too tired to continue, it's like that'. Consultants implicitly decided to demonstrate total engagement, through specific mobile IS uses that aimed to increase their efficiency

and demonstrate their loyalty to the company. They participated in producing representations of their activities that were then used to monitor and enforce trust and compliance.

Nonstop work and continuous availability as release

The most surprising observation was not that all consultants continued working and interacting outside typical business hours; it was that consultants really appreciated this situation. Mobile IS caused the dissolution of the boundaries between professional and private life, which consultants deliberately contributed to and reinforced through their uses, and which they particularly enjoyed. Most consultants referred to the metaphor of 'release' to express their perceptions of mobile IS use. Far from considering them an electronic leash, they viewed mobile IS as 'a way to free them', according to one junior consultant. The 'ability to access the company's IS, to reach others and be reached at any time and everywhere' was 'an inestimable comfort' to one of them. One senior consultant also stated, 'knowing that I can be reached anywhere, anytime is really comfortable for me. I really appreciate this permanent link I have with my colleagues and the company'. Another compared 'the permanent access to the company's resources at distance' to 'a luxury' that enabled him to 'be more efficient and to increase the number of affairs'. Such perceptions resulted in intensified uses of mobile IS both during and outside business hours, such as to access the company system or productivity tools such as e-mails and scheduling, which consultants found particularly comfortable, relieving, and satisfying.

None of them indicated a compulsion or difficulty to disengage with mobile IS. Only when they were questioned about their behaviour did they begin recognising the intensity of their mobile IS use. Yet a majority of consultants still attributed their behaviour to personal choices: 'It's not the company who asked me to be equipped with this mobile device. It's me who chose to do it. It's me who decided to be available and connected. I think it's the least I can do, given the autonomy I have and the trust they put in me', noted one consultant. They emphasised that management did not explicitly require continuous connectivity and that it was their personal decision to work, to remain available through mobile IS, and to integrate them into their everyday lives, during or outside business hours. They considered working outside traditional hours as 'something normal' or a 'moral obligation'. As one senior consultant remarked, 'It's part of my function and responsibilities'. One of his colleagues explained: 'It's normal to work outside normal hours, in the evening or at weekends. Even during holidays, I need to stay in touch, to know what's happening and to answer quickly'.

Following a long socialisation process, they associated specific values with their job, such as involvement, responsiveness, and discipline linked to time pressure. Shared expectations (e.g., mobile IS use anywhere, anytime) emerged from self-enforcing behavioural regularities and led to the emergence of implicit norms of behaviour. The norm that all consultants should be continuously connected was progressively expected and associated with unconscious guilt feelings in cases of unavailability, disconnection, or unreachability. Most consultants used words related to 'stress' and 'guilt' to express how they would feel if they could not be reached. Some managers also agreed that consultants were even more rigorous, conscientious, and hard-working when they worked from home; because they witnessed such management trust, they considered their own commitment a duty. Consultants eventually accepted implicit organisational expectations as their own rules and believed that these rules represented values that they had developed. As one manager mentioned, 'They put themselves under pressure; they don't need me to put the pressure to complete a mission'. According to him, 'the internalisation of certain demands, coupled with the use of appropriate technologies, leads to a kind of surpassing oneself'. The autonomy given to consultants and the trust management put in them were thus allowed and encouraged, because management could expect an unfailing response from consultants, who internalised this form of self-control.

Discussion: on 'free control'

This study offers empirical evidence that the ways mobile IS are engaged affect the dynamics of organisational control, providing IS researchers with an opportunity to revisit the panoptic metaphor. Foucault's (1977) ideas about panoptic disciplinary power, visibility, self-control, and the production of subjects remain pertinent (Martinez, 2010; Brivot & Gendron, 2011). However, the panoptic metaphor cannot do justice to the complexities and subtleties of the new control logics enacted with and through mobile IS, which are simultaneously more subtle, invisible, insidious and increasingly difficult to resist. To contemporise the panoptic metaphor and theorise about management control systems embedded in mobile IS use, the concept of 'free control' (i.e., a free-floating control based on the elimination of physical enclosures) seems particularly insightful. Following an abductive logic, we progressively built on this concept by comparing the themes that emerged from collected data with a literature review that reveals the limitations of the panoptic metaphor (Haggerty & Ericson, 2000; Munro, 2000). From our analytical coding, we identified four main characteristics of free control: a shift in the location of authority, the emergence of a time-related control system, trust-based control, and unawareness of the control being exercised. Each characteristic is connected to the interrelated limitations of the panoptic metaphor. Table 3 provides a synthesis of these characteristics, as observed at Bankco.

First, the evolution toward free control implies a *shift in the location of authority*, in that organisational actors take increasingly active roles in the control process. Echoing the evolution 'from a subdued prisoner to a voluntary

Table 3   **Summary of findings: the main characteristics of free control at Bankco**

Characteristics of free control	Description
Shift in the location of authority	Self-equipment with mobile IS and legitimation of underlying control system
	Obedience to organisational underlying rules
	Demonstration management, new games of visibility via mobile IS use
	Co-construction of means of control
	Complete internalisation of the new control logics, satisfaction in this constraining situation
Emergence of a time-related system	Circulation of people freely beyond the physical boundaries of the company
	Time pressure as a means of control over people who, by definition, are mobile in space and visually ungovernable
	Implicit adhesion to an anytime, anywhere responsiveness norm
	Constitution of a more intrusive, ceaseless, and real-time shaping minds
Trust-based control	Trust as a corollary of new control logics
	Enactment of mobile IS to build and reinforce trust
	Evolution towards an agile and flexible organisational form, flat management
	Existence of trust relationships favoured by management strong expectations
	Profound engagement (internalisation of organisational norms embedded in technology use)
Unawareness of the control being exercised	Use of mobile IS by people as a means to pursue their own goals
	New control logic, based on people's total involvement
	Subjectivity as a source of control and self-discipline
	Coercive autonomy

participant', our case shows how professionals legitimise technology and the underlying control system through their own initiative to adopt mobile IS and their practices and obedience with organisational underlying rules. The findings reveal that organisational members are not passive participants, as in the panoptic arrangement, but rather active players who strive to shape the perceptions of the observers. The new control logics suggest that consultants play an active role, because they behave according to their interpretations of others' perceptions. Whereas the ultimate goal of the panoptic arrangement is to automate discipline through self-monitoring, thus rendering the physical presence of the watcher unnecessary (Foucault, 1977), the professionals in this study rely on the watchers and even play with them, as they seek to promote certain representations of themselves through their behaviours (Roberts, 2009; Brivot & Gendron, 2011). Furthermore, whereas panopticon participants have no choice other than to obey, the professionals tried to influence others' (peers' and superiors') perceptions of their loyalty and commitment through their mobile IS uses. New 'games of visibility' (Brivot & Gendron, 2011) thus emerged from mobile IS use. Yet such games also helped build shared expectations that could turn against these professionals. Shared expectations acted as more or less coercive norms of communication that people needed to respect (Mazmanian *et al*, 2013). For example, the professionals participated directly in the construction of their own control by implicitly adhering to an anytime, anywhere responsiveness norm (Mazmanian *et al*, 2006; Middleton & Cukier, 2006). Contrary to the panoptic arrangement, in which prisoners were isolated, people in the free control logic are free to interact and create their

own rules that govern their behaviour. As consultants experienced the possibilities of their mobile IS and interacted with others, they developed shared understandings of their use (Mazmanian *et al*, 2006, 2013). Shared assumptions of availability and responsiveness in turn became shared expectations, which also redefined norms of communication, expectations of availability, and the boundaries of the workday (Mazmanian *et al*, 2013). Consultants were not controlled by the will of a powerful other; rather, it was the collection of organisational actors who interacted through mobile IS and performed indirect surveillance of one another's activities, reflecting the evolution 'from hierarchical surveillance to a more distributed control', that governed their norms. The ideas of a shift in the location of authority and a more active role of people in their own means of control deserve more attention. In the age of mobile IS, social media, and a user-based Internet, the active role of individuals in IT-based control systems has increased and takes various forms (e.g., co-construction of norms through IT use, compliance with organisational rules embedded in new IT, production of electronic tracks by IT users), depending on the population (Brivot & Gendron, 2011).

Second, a key change in control systems introduced by mobile IS involves the *emergence of a time-related control system*. This time-related control system appears as physical boundaries in space disappear, so that it compensates for the ubiquity that characterises the way mobile IS are enacted (Leclercq-Vandelannoitte, 2013). Rather than setting expectations based on physical presence, expectations of performance are set by demonstrating time on the job. Many respondents (especially managers and associates) relied on the metaphor of a time-based discipline, which

provided control over people who, by definition, are 'mobile in space' and 'visually ungovernable', as noted by the CEO. Free control implies that people can circulate freely, beyond the physical boundaries of the company; however, more intrusive, ceaseless, and real-time influences shape their minds and regulate their activity. Our case study reveals an implicit demand from management for consultants to increase their performance (i.e., number of affairs treated in a given amount of time) and reactivity; professionals felt the need and urgency to self-equip with technologies, further contributing to their own control. A time pressure also emerged from the consultants' use of mobile IS and became an organisational norm that they fully internalised. As a result, beyond panoptic enclosures, mobile IS enactment by consultants has given management a degree of control over these professionals' behaviours that the company cannot manage physically. Time appears as a governance technique (Foucault, 1977) and serves to control organisational members who are not compartmentalised in space. Moreover, control over these professionals' activities is exercised over the temporal boundary between their workday and personal life, as shown by our observation of five consultants (Prasopoulou *et al*, 2006; Hislop & Axtell, 2011). Mobile IS thus prefigure the emergence of a new sociotemporal order in companies, which is based on technological properties and users' behaviours (Prasopoulou *et al*, 2006). Embodying the evolution 'from an enclosed physical prison to potential virtual unbounded control', the idea of time-based control reveals the subtlety of modern IT-based control systems and deserves more attention. Deleuze (1992, p. 447) argues that 'the conception of a control mechanism, giving the position of any element within an open environment at any given instant (whether animal in a reserve or human in a corporation, as with an electronic collar), is not necessarily one of science fiction.... What counts is not the barrier but the computer that tracks each person's position'. In the mobile age, management can go beyond spatial boundaries to control people through time-based discipline. Through mobile IS use, time can effectively become a governance technique: It is an instrument for locating people (through control of time spent on sites or obligation for mobile staff to report in real time), but it also can be more pernicious, acting as an organisational norm exerted on the minds of individuals.

Third, the findings emerging about free control emphasise a concept not found in Foucault's (1977) view of panopticon – namely, the *concept of trust* (Benbasat *et al*, 2010). Beyond panoptical arrangements, the case reveals how mobile IS are enacted by both managers and consultants in ways that serve to build, legitimate, and reinforce trust. Foucault's work explores disciplinary mechanisms such as surveillance, visibility, and normalisation, providing clear conceptual insights into the evolution of organisational control systems (Zuboff, 1988; Poster, 1990). But he pays little attention to the relationships of trust that underlie these modes of control. Our findings suggest that the free control system relies on trust

relationships coupled with the use of mobile IS, which render possible the evolution 'from an enclosed physical prison to potential virtual unbounded control'. Although the concept of trust has taken centre stage in IS research – such as through a better understanding of the antecedents and consequences of trust in online environments (Benbasat *et al*, 2010) – it has rarely been conceived of in combination with the emergence of new disciplinary practices embedded in technology use. Our findings reveal how trust can be a corollary of new control logics and a basis for disciplinary practices inscribed in technology use. In this way, in IT-supported environments, characterised by prevalent mobile IS and social media, trust can develop with the aid of IT through disciplinary and self-disciplinary mechanisms. Further in-depth research should study how various control systems rely on distinctive relationships of trust, in keeping with the different visions of the mobile populations concerned. Flexibility, autonomy, mobility, and movement are encouraged by management to increase their trust in consultants. These relationships result from management's ideas of the populations in question and reflect a far broader process of socialisation and training of individual members. However, such trust relationships also are rendered possible because management can expect profound engagement from professionals, linked to their prior internalisation of organisational norms embedded in technology use, as translated in the emergence of a more voluntary participant. As a consequence, mobile IS are engaged by consultants as instruments that legitimise the trust the company puts in them, leading them to produce and conform to the representations that managers use to assess their performance (total commitment and availability).

Fourth, and as a result of the shift in the location of authority, by internalising values associated with mobile IS, these professionals participate in and purposefully construct a process of urgency, reactivity, and habit that may leave them *unaware of the control being exercised*, which renders it even more pernicious. The concept of free control overturns the notions of the autonomy and empowerment of consultants by showing that the organisation demands new, more subtle, invisible, and insidious constraints. Critical studies have shown that technological changes may 'disguise control in the rhetoric of emancipation' (Jermier, 1998, p. 235). Our findings reinforce this argument by showing that mobile IS offer flexibility and freedom that, at the same time, are disguised forms of 'coercive autonomy' (Hayes & Walsham, 2000). The company's disclosure and use of mobile IS increase professionals' autonomy and flexibility and address some inherent expectations related to their social life (e.g., choice of moments, increased mobility). Self-discipline, the search for satisfaction and equilibrium in professional and private spheres (Middleton & Cukier, 2006; Prasopoulou *et al*, 2006; Scheepers *et al*, 2006), and the emergence of personal reflexivity explain how these professionals were led to use the technology to pursue their own goals, while also implicitly subscribing to new constraints they helped

build (Mazmanian *et al*, 2013). The emergence of free control thus confirms the evolution 'from unilateral constraints to dialectics of control and autonomy'. Consultants internalised highly constricting norms and values that embody a real duty of engagement and involvement. Constant availability, permanent reactivity, and an obligation to achieve provided a counterpoint to the flexibility, mobility, ubiquity, and remote work enabled by mobile IS and engaged in managerial discourses. They also gave rise to a new control logic, based on the total involvement of the professional. This *control of involvement* means that subjectivity becomes a source of control and self-discipline. The norms these professionals co-constructed are more easily accepted because they act on their minds and subjectivity. Consultants developed a moral obligation towards what was initially a simple reinforcement of their autonomy and mobility. Ironically, these professionals wound up losing their most crucial resource: time.

In summary, 'free control' can be understood as a conceptual tool that enables us to rethink our approach to organisational control and the relationships of individuals to organisations in a mobile age. The case study shows how consultants receive encouragement from management to 'free' themselves from legal timetables and traditional workplaces to conduct their activities. They are fully aware of the need to be reactive, reachable, and efficient, so they equip themselves with mobile IS, which provide ubiquity. These professionals are autonomous, independent, mobile, flexible, and free to carry out their activities beyond the company's spatio-temporal boundaries. However, the findings also reveal the emergence of a subtle, invisible form of free control through the use of mobile IS. An information network keeps professionals in close proximity to the company (Zarifian, 2004) and even leads them to build their own control through the co-construction of a norm of permanent availability. The notion of anywhere, anytime connectivity is not new (Robey *et al*, 2004; Cousins & Robey, 2005; Mazmanian *et al*, 2005; Middleton & Cukier, 2006); organisational socialisation and self-subjugation already have appeared in past research as mechanisms of particularly pernicious

forms of organisational control (Deetz, 1997; Alvesson & Willmott, 2002; Kärreman & Alvesson, 2004), such that knowledge professionals purposefully abdicate control over when, where, and how much they work (Michel, 2011), especially through mobile IS use (Mazmanian *et al*, 2013). Our findings contribute to this line of research by suggesting that this dynamic warrants a re-examination of the panopticon metaphor. In particular, the proposed concept of free control helps illustrate the paradoxes located in the renewed control logics induced by the enactment of mobile IS in organisational contexts.

Our analysis enables us to specify the dimensions of 'free control' and to compare them with the characteristics of panoptic control. Unlike hierarchical surveillance based on constant visibility by a superior authority, free control involves more distributed control, relying on an information network through which voluntary participants build the means of their own control. Whereas participants used to be objects of unilateral communication in panoptic arrangements, free control implies they are subjects of more interactive and lateral communication processes. Whereas enclosure, immobility, and physical boundaries constrain action, free control relies on disclosure, mobility, and ubiquity, enabled by and enabling the construction of a time-related discipline. Rather than top-down scrutiny of bodies and behaviours, free control favours trust-based control, built with and through the enactment of mobile IS, which induces a control of involvement. Table 4 synthesises this comparison of free control with panoptic control.

Concluding comments

Foucault (1983) ultimately recognised that top-down scrutiny and the total subjection of individuals enabled by panoptic arrangements were an oversimplification (Brivot & Gendron, 2011). Although Foucault predicted the end of the disciplinary society, he did not apply his reflections to these largely disciplinary technological sources of free control mechanisms, liberated from all forms of enclosure. Yet mobile IS use has reshaped traditional strategies of organisational IT-based control. This article provides

Table 4 Comparison of panoptic and free control characteristics

	Panoptic control	*Free control*
Nature of control	Hierarchical surveillance	Distributed control
Control devices	Constant visibility	Information network
Location of authority	Superior authority	Voluntary participants
Individual's role in communication	Object of information	Subject in communication
Direction	Unilateral	Interactive and lateral
Spatio-temporal framework	Enclosure	Disclosure
	Immobility	Mobility
	Physical boundaries	Ubiquity
	Bounded times, legal timetables	Real, intrusive, ceaseless time, time-related discipline
Underlying principles	Top-down scrutiny over bodies	Trust
	Behaviour scrutinising	Control of engagement/involvement

conceptual and empirical evidence of the limitations of the panoptic metaphor in informing the control potential of mobile IS. It contemporises the panoptic metaphor through a renewed conceptualisation of control induced by mobile IS use. The concept of free control implies that a powerful information network keeps professionals in a position of 'allowed subjection'. Through the use of mobile IS, these professionals implicitly build and adhere to a norm of constant availability that acts as an invisible but powerful constraint on their minds. Professionals are flexible, mobile, and autonomous, but their freedom and the trust they receive from management have a price: insidious control over their total involvement.

Conceptual contributions

As mobility becomes a central feature of society, exploring the evolution of control systems in relation to mobile IS is a key issue for IS researchers. The increased power and prevalence of mobile IS, and their entanglement in people's everyday activities, require IS researchers to revisit assumptions about fundamental dimensions of human experience, namely, space and time, and their relationships with human behaviours and activities beyond the organisation's classic boundaries. Through the concept of free control, this study makes visible the invisible control logics that operate through mobile IS and offer themselves as release and freedom and are thus more pernicious. By doing so, it invites IS researchers to rethink the role of the organisation's spatio-temporal framework. More than ever, control and surveillance exist in a world of flows and mobility (Lyon, 2002), in which a time-related discipline compensates for the disappearance of physical boundaries and the ubiquity allowed by mobile IS. Mobility and the enactment of mobile IS create a virtual space of action and control, which goes beyond the physical boundaries of the organisation through its cognitive or symbolic dimensions. Organisational control increasingly relies on idealised spaces based on trust and total involvement, constituted through material artefacts. Mobility implies that spaces are not only physical architectures but also symbolic areas in which time discipline, regulation, and control processes are co-constructed by people through specific technology uses.

This research extends some prior results, which have shown how mobile IS are often enacted in a manner that intensifies expectations of availability, responsiveness, and subjugation of individual time to organisational concerns (Robey *et al*, 2004; Cousins & Robey, 2005; Mazmanian *et al*, 2005; Middleton & Cukier, 2006). However, it is not always the case, depending on the context under study. Mazmanian (2013) for example suggests that mobile IS do not inherently lead to increased expectations of availability in the workplace, as shown by the emergence of homogeneous and heterogeneous trajectories of use. The results thus demand some nuance, because people might engage the same technology to create different patterns of use depending on social, organisational,

political, and functional contexts (Mazmanian, 2013). Furthermore, beyond the negative aspects of mobile IS use, we must recognise the power of information technologies to symbolise stress, which leads people to invoke mobile IS applications as a 'cultural symbol of the overload they experience' that 'distracts them from recognizing other sources of overload in their work lives' (Barley *et al*, 2011, p. 887).

Practical contributions

Exploring the managerial challenges raised by mobile IS becomes an increasingly important task as mobility and flexible working practices grow more widespread. However, there is a dearth of IS research on this subject (Robey *et al*, 2004; Scheepers *et al*, 2006; De Saulles & Horner, 2011). As mobility and mobile IS get enacted in ways that potentially transform social relationships, this study reveals the nature and the depth of the behavioural social impacts of mobile IS and shines new light on issues of control and stress. By revolutionising the spatio-temporal framework of organisations, mobile IS affects key functions of management, such as supervision and control, which evolve towards more open and mobile forms. These renewed forms of control inevitably raise the question of ethics and organisational social responsibility. Ethical issues are particularly important in terms of the control of workers' activities and performances, and they are all the more salient as mobile IS generate a form of remote control, both during and outside working hours, blurring the boundaries between professional and personal lives. Our research suggests a need for companies to reflect on the kind of practices they want to promote through mobile IS use. Given the behavioural and social impacts of mobile IS, we suggest the need to rethink managerial methods based on the development of new rules governing mobile IS uses, to enhance employees' well-being while keeping their efficiency. Thus management should question the uses of mobile IS and provide guidelines for their employees about relevant and effective uses of technologies, to encourage work–life balance (Middleton & Cukier, 2006).

Limitations and further research

This study also has some limitations, which provide a potential basis for additional IS research. We conducted an exploratory study in a single company, a small consulting agency, which presents some specificities compared with larger companies in other fields that implement company-wide enterprise systems. For example, the small size, activity, company structure, and relatively low level of formalisation might explain the deployment logic of mobile IS and evolution of control systems. Moreover, consulting is a very specific activity, characterised by close client interaction that is quite stressful, which also could explain the nature of our findings. Furthermore, since 2008 (time of data collection), mobile IS have become much more common and widespread in society. In this rapidly changing environment, it thus seems crucial to

keep studying the dynamics of technological control as they may continue to evolve. The findings thus need greater nuance, to identify various trajectories of mobile IS use according to the context (Mazmanian, 2013); they could be validated with empirical research and field testing in other contexts and in application to other technologies. It would be interesting to advance findings related to the shift in the location of authority, the emergence of a time-based discipline, the question of trust in IT-based control systems, and the development of more subtle forms of

control that people co-construct. Beyond the specificities of our case study, the findings echo the evolution of our highly mobile, modern society, characterised by the advent of increasingly sophisticated mobile IS, networked computer databases, and social media, where users gain more active roles, raising important questions in terms of control, surveillance, and trust. Our findings thus might extend to other kinds of technologies and contexts, to enable IS researchers to capture the evolution of the nature of IT-based contemporary control.

About the Authors

Aurélie Leclercq-Vandelannoitte is Associate Professor at IESEG School of Management, LEM CNRS (UMR 8179). She holds a Ph.D. in Management from Paris-Dauphine University and has received three Ph.D. national awards. Her research focuses on the organisational and human implications of the use of mobile systems. She has presented her research at ICIS, ECIS, AMCIS, AIM and has published in journals such as *EJIS*, *The Database for Advances in Information Systems* and *Organization Studies*.

Henri Isaac, is Associate Professor at Université Paris-Dauphine. He was Associate Dean of Research & Faculty at Rouen Business School (2009–2012). He co-authored several books on digital issues, such as 'E-commerce',

3rd Edition (2014, Pearson), 'Digital Marketing' (2014, Pearson), 'Teleworking & e-management: Organisation and control' (2013, Dunod). He also wrote a report on 'the university in the digital age' for the French Higher Education Minister (2008).

Michel Kalika is Professor at Université Paris-Dauphine. His research focuses on the use of e-mail by managers, its impact on meetings, the 'Millefeuille' theory, IT strategic alignment. He has published more than 20 books and approximately a hundred various other publications, including journal articles, conference proceedings, book chapters, and case studies in strategy and information technology.

References

ALVESSON M and WILLMOTT H (2002) Identity regulation as organizational control: producing the appropriate individual. *Journal of Management Studies* **39(5)**, 619–644.

ARNOLD M (2003) On the phenomenology of technology: the Janus-faces of mobile phones. *Information and Organization* **13(4)**, 231–256.

BARLEY SR, MEYERSON DE and GRODAL S (2011) Email as a symbol: a sociomaterial account of how communication technologies produce stress. *Organization Science* **22(4)**, 887–906.

BASKERVILLE R (1999) Investigating information systems with action research. *Communications of the AIS* **2(3)**, 1–32.

BENBASAT I, GEFEN D and PAVLOU P (2010) Introduction to the special issue on novel perspectives on trust in information systems. *MIS Quarterly* **34(2)**, 367–371.

BENIGER JR (1986) *The Control Revolution: Technological and Economic Origins of the Information Society*. Harvard University Press, Cambridge.

BENTHAM J (1787/1995) Panopticon (1780). In *The Panopticon Writings* (BOZOVIC M, Ed), pp. 29–95, Verso, London.

BRIVOT M and GENDRON Y (2011) Beyond panopticism: on the ramifications of surveillance in a contemporary professional setting. *Accounting, Organizations and Society* **36(3)**, 135–155.

CALUYA G (2010) The post-panoptic society? Reassessing Foucault in surveillance studies. *Social Identities* **16(5)**, 621–633.

COUSINS CK and ROBEY D (2005) Human agency in a wireless world: patterns of technology use in nomadic computing environments. *Information and Organization* **15(2)**, 151–180.

DEETZ S (1997) Discursive formations, strategized subordination and self-surveillance. In *Foucault, Management and Organization Theory* (MCKINLEY AS, Ed), pp. 151–172, Sage, London.

DELEUZE G (1992) *Postscript on the Societies of Control*. pp. 3–7, MIT Press, Cambridge, MA.

DELEUZE G and GUATTARI F (1987) *A Thousand Plateaus*. University of Minnesota Press, Minneapolis.

DE SAULLES M and HORNER DS (2011) The portable panopticon: morality and mobile technologies. *Journal of Information, Communication & Ethics in Society* **9(3)**, 206–216.

DOYLE A (2011) Revisiting the synopticon: reconsidering Mathiesen's 'The Viewer Society' in the age of Web 2.0. *Theoretical Criminology* **15(3)**, 283–299.

ELMES MB, STRONG DM and VOLKOFF O (2005) Panoptic empowerment and reflective conformity in enterprise systems-enabled organizations. *Information and Organization* **15(1)**, 1–37.

FOUCAULT M (1977) *Discipline and Punish. The Birth of the Prison*. Penguin Books, London.

FOUCAULT M (1983) The subject and power. In *Michel Foucault: Beyond structuralism and hermeneutics* (DREYFUS H and RABINOW P, Eds), University of Chicago Press, Chicago.

HAGGERTY KD and ERICSON RV (2000) The surveillant assemblage. *British Journal of Sociology* **51(4)**, 605–622.

HARMON E and MAZMANIAN M (2013) Stories of the smartphone in everyday discourse: conflict, tension & instability, *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, pp. 1051–1060, ACM, New York.

HAYES N and WALSHAM G (2000) Competing interpretations of computer-supported cooperative work in organizational contexts. *Organization* **7(1)**, 49–67.

HENFRIDSSON O and LINDGREN R (2005) Multi-contextuality in ubiquitous computing: investigating the car case through action research. *Information and Organization* **15(2)**, 95–124.

HISLOP D and AXTELL C (2011) Mobile phones during work and non-work time: a case study of mobile, non-managerial workers. *Information and Organization* **21(1)**, 41–56.

JARVENPAA SL and LANG KR (2005) Managing the paradoxes of mobile technology. *IS Management* **22(4)**, 7–23.

JERMIER JM (1998) Introduction: critical perspectives on organizational control. *Administrative Science Quarterly* **43(2)**, 235–256.

KAKIHARA M and SORENSEN C (2002) Mobility: an extended perspective. In *Proceedings of the 35th Annual Hawaii International Conference on Systems Sciences*, pp. 1756–1766, HICSS, IEEE, Hawaii.

KALLINIKOS J (2005) The order of technology: complexity and control in a connected world. *Information and Organization* **15(3)**, 185–202.

KÄRREMAN D and ALVESSON M (2004) Cages in tandem: management control, social identity, and identification in a knowledge intensive firm. *Organization* **11**(1), 149–175.

LECLERCQ-VANDELANNOITTE A (2013) Beyond panoptic enclosures? On the spatiotemporal dimension of organizational control as induced by mobile information systems? In *Materiality and Space* (DE VAUJANY FX and MITEV N, Eds), Palgrave-Macmillan, Basingstoke, UK.

LYON D (1993) An electronic panopticon? A sociological critique of surveillance society. *Sociological Review* **41**(3), 653–678.

LYON D (1994) *The Rise of Surveillance Society*. Polity, Cambridge, UK.

LYON D (2002) Surveillance studies: understanding visibility, mobility, and the phenetic fix. *Surveillance and Society* **1**(1), 1–7.

LYON D (2007) *Surveillance Studies: An Overview*. Polity, Cambridge, UK.

LYYTINEN K and YOO Y (2002) Research commentary: the next wave of nomadic computing. *Information Systems Research* **13**(4), 377–388.

MARTINEZ DE (2010) Beyond disciplinary enclosures: management control in the society of control. *Critical Perspectives on Accounting* **22**(2), 200–211.

MAZMANIAN M (2013) Avoiding the trap of constant connectivity: when congruent frames allow for heterogeneous practices. *Academy of Management Journal*, Published online 30 July 2012. [WWW document] http://amj.aom.org/content/early/2012/07/30/amj.2010.0787.full.pdf+html (accessed 1 September 2012).

MAZMANIAN M, ORLIKOWSKI WJ and YATES J (2013) The autonomy paradox: the implications of mobile email devices for knowledge professionals. *Organization Science* **24**(55), 1337–1357.

MAZMANIAN MA, ORLIKOWSKI WJ and YATES J (2005) Crackberries: the social implications of ubiquitous wireless e-mail devices. In *Designing Ubiquitous Information Environments: Socio-Technical Issues and Challenges* (SORENSEN C, YOO Y, LYYTINEN K and DEGROSS JI, Eds), pp. 337–344, Springer, New York.

MAZMANIAN MA, ORLIKOWSKI WJ and YATES J (2006) Ubiquitous email: individual experiences and organizational consequences of BlackBerry use. In *Proceedings of the 65th Annual Meeting of the Academy of Management*, Atlanta, GA.

MICHEL A (2011) Transcending socialization: a nine-year ethnography of the body's role in organizational control and knowledge workers' transformation. *Administrative Science Quarterly* **56**(3), 325–368.

MIDDLETON CA and CUKIER W (2006) Is mobile email functional or dysfunctional? Two perspectives on mobile email usage. *European Journal of Information Systems* **15**(3), 252–260.

MIDDLETON CA, SCHEEPERS R and TUUNAINEN V (2011) Call for papers: Special issue on mobile information systems and mobility. *European Journal of Information Systems*. [WWW document] http://www.palgrave-journals.com/ejis/index.html (accessed 1 October 2011).

MILES M and HUBERMAN M (1994) *Qualitative Data Analysis*. Sage, Beverly Hills.

MINTZBERG H (1994) Rounding out the manager's job. *Sloan Management Review* **36**(1), 11–26.

MORGAN G (1986) *Images of Organisations*. Sage, Newbury Park.

MUNRO I (2000) Non-disciplinary power and the network society. *Organization* **7**(4), 679–695.

POSTER M (1990) *The Mode of Information: Poststructuralism and Social Context*. Polity, Cambridge.

PRASOPOULOU E, POULOUDI A and PANTELI N (2006) Enacting new temporal boundaries: the role of mobile phones. *European Journal of Information Systems* **15**(3), 277–284.

ROBERTS J (2009) No one is perfect: the limits of transparency and an ethic for "intelligent" accountability. *Accounting, Organizations and Society* **34**(8), 957–997.

ROBEY D *et al* (2004) Surfing the next wave: design and implementation challenges of ubiquitous computing environments. *Communications of the AIS* **13**(1), 697–716.

SCHEEPERS R, SCHEEPERS H and NGWENYAMA OK (2006) Contextual influences on user satisfaction with mobile computing: findings from two healthcare organizations. *European Journal of Information Systems* **15**(3), 261–268.

SEWELL G (1998) The discipline of teams: the control of team-based industrial work through electronic and peer surveillance. *Administrative Science Quarterly* **43**(2), 397–428.

SEWELL G and WILKINSON B (1992) Someone to watch over me: surveillance, discipline and the just-in-time labour process. *Sociology* **26**(2), 271–289.

SIA SK, TANG M, SOH C and BOH WF (2002) Enterprise resource planning (ERP) as a technology of power: empowerment or panoptic control? *The DATA BASE for Advances in Information Systems* **33**(1), 23–37.

TOWNLEY B (1993) Foucault, power/knowledge, and its relevance for human resource management. *Academy of Management Review* **18**(3), 518–545.

VAN DER HEIJDEN H and JUNGLAS I (2006) Introduction to the special issue on mobile user behavior. *European Journal of Information Systems* **15**(3), 249–251.

VARSHNEY U (2003) Mobile and wireless information systems: applications. networks, and research problems. *Communications of the AIS* **12**(11), 155–166.

VIERA DA CUNHA J, CARUGATI A and LECLERCQ-VANDELANNOITTE A (2012) On the dimensions of technological control. *Academy of Management (AOM) Annual Meeting*, Boston, MA.

WALSHAM G (2006) Doing interpretive research. *European Journal of Information Systems* **15**(3), 320–330.

WEBSTER J (1995) Networks of collaboration or conflict? Electronic data interchange and power in the supply chain. *Journal of Strategic Information Systems* **4**(1), 31–42.

WECKERT J (2005) *Electronic Monitoring in the Workplace: Controversies and Solutions*. Idea Group Publishing, Hershey, PA.

WEICK KE (2001) *Making Sense of the Organisation*. Blackwell Publishers, Oxford, UK.

WILLCOCKS LP (2004) Foucault. Power/knowledge and information systems: reconstructing the present. In *Social Theory and Philosophy for Information Systems* (MINGERS J and WILLCOCKS L, Eds), John Wiley & Sons, New York.

WIREDU GO and SORENSEN C (2006) The dynamics of control and mobile computing in distributed activities. *European Journal of Information Systems* **15**(3), 307–319.

ZARIFIAN P (2004) Contrôle des engagements et productivité sociale. *Majeure: L'intermittence dans tous ses états* **17**(3), 57–67.

ZUBOFF S (1988) *In the Age of the Smart Machine: The Future of Work and Power*. Basic Books, New York.