



Mobility at work A typology of mobile communities of practice and contextual ambidexterity

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ARTICLE INFO

Article history:

Received 11 December 2011

Received in revised form 25 March 2013

Accepted 25 March 2013

Available online 26 April 2013

Keywords:

Communities of practice

Mobile technology

Ambidexterity

Organizational alignment

Adaptability and discretion

Mobility

Knowledge management

ABSTRACT

Innovations in mobile technology shape how mobile workers share knowledge and collaborate on the go. We introduce mobile communities of practice (MCOPs) as a lens for understanding how these workers self-organize, and present three MCOP case studies. Working from contextual ambidexterity, we develop a typology of bureaucratic, anarchic, idiosyncratic and adhocratic MCOPs. We discuss how variations in the degree of organizational alignment and individual discretion shape the extent to which these types explore and exploit mobile work practices and approach organizational ambidexterity. This article concludes with important strategic implications for managing mobile work and practical considerations for identifying, creating, and supporting MCOPs.

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1. Introduction

Today, we witness a major shift to mobility as the main technological focus of Information Technology (IT) development, as a new network structure and as a facilitator of business activity. More than five billion mobile service subscriptions support that approximately 80% of the world's population communicates on the go (Global Mobile Suppliers Association, 2012). To improve opportunities for mobile connectivity and collaboration, recent innovations include developments of new hardware (e.g., Apple's iPad), operating systems (e.g., Google's Android), communication software (e.g., Skype), networks (e.g., 4G LTE), new convergent technologies like Smart SIMs and ubiquitous computing resources (e.g., software, storage, data) that are now delivered on demand and "as a service" from the cloud.

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Although the uptake of mobile IT in firms has been slow when compared to consumer adoption, mobile IT is moving up the list of important technological concerns for organizations (Sørensen et al., 2008). Today's mobile workers negotiate a dynamic environment with multiple and often inconsistent contextual demands (Koch and Schultze, 2011; Smith and Tushman, 2005), as well as complex paradoxes that emerge in the field (Dennis et al., 2008; Kumar and Zahn, 2003). Despite the growing importance of workplace mobility and its impact on organizational performance metrics (Kietzmann, 2008; Sørensen, 2011b), empirical examinations of how workers truly collaborate through mobile technology and of implications for managing mobile work are scarce (Schrott and Glückler, 2004; Sørensen, 2011b). Defined as “the use of mobile IT for the accomplishment, coordination and management of organizational activities” (Sørensen, 2011a, p. 476), *enterprise mobility* is a relative new and emergent area of research, especially when compared to the availability of a “significant body of research on the impact of mobile communications on social life in general” (Sørensen, 2011a, p. 476). Research in enterprise mobility (e.g., Al-Taitoon, 2005; Pinelle and Gutwin, 2003) tends to concentrate on three areas. The first focuses on the opportunities that mobile technology affords for changes in working practices of individual mobile workers (e.g., Makimoto and Manners, 1997). The second examines accompanying changes in work arrangements, such as the enabling of telecommuting (e.g., Daniels et al., 2001). The third explores the importance of physical settings of mobility for workers, including for example off-premises foreign exchange traders (e.g., Sørensen and Al-Taitoon, 2008), police officers (e.g., Manning, 2008), and taxi drivers (e.g., Skok and Kobayashi, 2007). Our research analyzes how mobility and mobile technologies shape community-collaboration and inspects the implications for the management of mobile employees.

After introducing a “mobile community of practice” (MCOP) lens as appropriate for examining this phenomenon, we present our methodology and three vignettes that illustrate our case studies. Subsequently, we introduce “organizational alignment” and “individual discretion” as two fundamental dimensions of four different types of mobile communities – bureaucratic, anarchic, idiosyncratic and adhocratic. From this typology, specific implications are discussed alongside propositions for organizations to identify, create, support and manage mobile communities of practice effectively. We conclude by summarizing our contributions and discussing opportunities for research that emerge out of our typology.

2. Knowledge sharing in communities

Since the widespread adoption of the Internet, management scholars in general, and information systems researchers in particular, have emphasized how knowledge-work depends not only on new communication affordances but also on the behaviors and motivations of those who undertake and manage it (Newell et al., 2009). Prominent works focus on co-located or distributed work groups (Dourish and Bly, 1992; Gupta et al., 2009), project teams (Evaristo et al., 2004; Oshri et al., 2008), consortia, alliances, and joint ventures (Ibrahim and Ribbers, 2009; Miles and Snow, 1995). Although less emphasis has been placed on individuals who do not work together under such hierarchical structures, we argue that it is important that managers understand how their decisions play a critical role (Dubé et al., 2006) in how workers *self-organize* as “communities of communities” (Brown and Duguid, 1991, p. 54). We also believe that it is timely to focus on *mobility* in a discussion of community-based knowledge sharing (Wasko and Faraj, 2000), as collaboration across organizational boundaries (e.g., Adebajo and Michaelides, 2009; Elaluf-Calderwood et al., 2005; Kim, 2000; Lefebvre and Lefebvre, 2002; Wattal et al., 2010) increasingly happens through mobile IT.

Our work focuses on mobile workers who spend considerable amounts of time setting up and maintaining their personal and professional relationships on the go. For understanding such mobile work contexts, where workers who rely on mobile technology in their ongoing practices enact structures which shape their emergent and situated use of that technology (Orlikowski, 2007), the community of practice (COP) lens proves to be a particularly useful basis.

2.1. Communities of practice

Communities of practice (Lave and Wenger, 1991; Wenger, 1998) was originally developed to describe how people who share a common activity form communities specifically with the goals of developing themselves personally and professionally, and gaining knowledge related to their field. These communities are everywhere; they exist in everyone's personal life and in every organization. As private persons, we attend churches with others, have similar hobbies or play sports together. As workers, we join communities within our departments (within business units), with colleagues from other units (across business units) and with yet others who are not part of our organization at all (across company boundaries). COPs in an organizational context form around the knowledge of their respective members and are maintained through ongoing participation and learning, not deadlines or task accomplishments.

These communities exist around social and professional practices and are not mutually exclusive; people *participate* in any number of communities that are fluid in their make-up (Parameswaran and Whinston, 2007; Wenger, 1998). Participation, which “refers to a process of taking part and also to the relations with others that reflect this process” (Wenger, 1998, p. 55), is not pre-planned, restricted to a fixed schedule or limited to particular work activities. When workers participate of their own volition, often outside of work-time and across various contexts, they continually negotiate a *joint enterprise*, where each individual identifies with a commonly shared set of work practices. Such relationships do not emerge over night; they require trust, community participation and continued exchange of knowledge. COPs are relationships of give-and-take, in which members establish a *mutual engagement* built on shared norms and cooperative relationships, and develop a *shared*

repertoire, set of communal resources such as a common professional language, familiar routines, sensibilities, artifacts, tools, and stories.

The boundary-spanning exchange of knowledge among community members from different organizations is beneficial to a number of stakeholders. Clearly, the community members profit from others' knowledge in problem-solving situations, stay abreast of developments within their work practices and improve their own skill-sets (Voutsina et al., 2007). As a result, these communities are crucial for knowledge creation (Galliers, 2011) and become knowledge repositories that represent valuable sources of information, learning and innovation for organizations. However, it is important to note that knowledge created within a COP generally cannot be shared effectively with non-members of the COP (or with members of others COPs) since these are not privy to the joint enterprise, mutual engagement and shared repertoire.

2.2. Mobile communities of practice

We examined numerous articles on “working together”, published in JSIS and other leading Information Systems, computer-supported cooperative work and general organizational studies and management journals. Keyword searches focused on work constellations, and included, among others, co-located, mobile, virtual and distributed work; cooperation, coordination and collaboration; and knowledge management. Common results included teams, groups, communities and networks. In Table 1, we included other, less common constellations, like knotworking, to illustrate the complexity and variance of working together. The purpose of this review was to help select an appropriate lens for studying community-based work in mobile settings, not to provide an exhaustive account of all existent forms of collaboration. The main observations we drew from this review include that (1) a multitude of overlapping publications focuses on collaboration among

Table 1
Collaboration constellations.

	Constellation	Temporal or boundary focus	Basis of relationship	Authors
Under organizational control	Work groups/ project teams	Within organizational boundaries or across organizational boundaries	Project focused or ongoing	Dourish and Bly (1992), Evaristo et al. (2004), Cummings (2004) and Oshri et al. (2008)
	Knotworks	Very short term, hydrodynamic relationships within an organization	Loosely connected and mostly co-located individuals are joined in a knot, without a shared lore. occur mostly in co-located work environments, for instance collaboration of airline crews during flights	Engeström et al. (1999)
	Coalitions	Temporary, virtual	Relationships with coordination capabilities functionally equivalent to those that occur naturally in an organized collaboration, for instance buying and veiling of securities through brokerage operations	Zager (2001) and Andersen (2001)
Self-organized/under control of the individual(s)	Networks	Ongoing, spanning access to people but also to resources these can mobilize within their networks	About relationships, business or personal	Adler and Kwon (2009), Granovetter (1983) and Webster (1995)
	Virtual teams	Different degrees of structural dynamism	Geographical dispersion, national diversity and electronic dependence, for instance engineering project teams that design a military aircraft	Gibson and Gibbs (2006), Shankar et al. (2002) and Ridings et al. (2002)
	netWORKs	Project focused	<i>Intensional</i> (derived from intense) Networks of netWORKers About using <i>personal</i> relationships to solve business problems	Nardi et al. (2001)
	Proximal communities	Focus on “place” as joining factor for either life or work	Based on practical dependencies of living in proximity with commitments to shared purposes and meanings	Carroll and Rosson (2003)
	Communities of interest	Short or long term, boundary spanning	Based on members with <i>different practices</i>	Fischer (2001)
	Communities of practice	Long term, ongoing no regard to functional, hierarchical, or organizational boundaries	Emerge around specific <i>interests</i> Based on professional expertise and practice-based relationships Members produce a <i>shared practice</i> as they engage in a collective process of learning	Wenger (1998) and Wasko and Faraj (2000)

individuals and groups, often without clear definitions, (2) the locus of control and the boundary of collaboration in these works is either the organization or the community of people, but not both, (3) existing research either looks at personal or professional relationships, but not both, and (4) the main geographical foci are co-location, distribution (that is remote, but fixed location) or virtual collaboration, but never specifically mobile collaboration.

Communities of practice emerged as a highly appropriate basis for a study of mobile community work, despite COP's original focus on co-location (Wenger et al., 2002). Extensions of the COP framework for distributed settings most prominently include virtual communities of practice (VCOPs) (Ardichvili, 2008; Dubé et al., 2005), where individuals rely on IT to connect with each other, whether they are physically located in the same building (low dispersion) or scattered around the world (high dispersion) (Dubé et al., 2006). Although VCOPs are not concerned with how specific attributes of location and mobility shape the formative community context, VCOP's primary focus on overcoming spatial constraints through *technological* connectivity across locations (Dubé et al., 2006) paved the way for conceptualizations of other kinds of communities of practice that are not co-located.

Work in mobile communities of practice is also computer-mediated, marked by advances in *means of mobile communication* (e.g., from pager to smartphone), *supporting infrastructure* (e.g., faster networks, better signal coverage) and of *communicative acts* (e.g., from speaking and mobile email to texting and tweeting). Mobile enterprise studies draw particular attention to the mutually constitutive elements of technological possibilities and work practices (Sørensen, 2011a). Although mobile devices are often seen as simple conduits for interpersonal communication, mobile communication is a dyadic process in which members of a community co-define and negotiate their relationship through various communication styles and participation strategies to “reduce uncertainty [...], to be self-efficacious, and to maximize rewards from creating, sustaining, or ending the relationship” (Heath and Bryant, 2000, p. 158). Mobility directly shapes how communities develop over time, and how these support a range of social purposes from micro-coordination (Ling, 2004), through building trust and a sense of belonging to nurturing deep social relationships (Ling, 2008). A review of the literature confirms that properties of mobility, as “the most radical form of flexible working” (Sørensen, 2011a, p. 3), differs significantly from non-mobile work (Sørensen, 2011a), that mobile communication profoundly impacts human interaction and decision-making (Al-Taiyton, 2005), and that people collaborate and conduct business differently when this is mediated by mobile information and communication technologies (Pinelle and Gutwin, 2003).

These mobility properties alone do not sufficiently illustrate the distinctiveness of mobility and MCOPs, particularly in comparison to virtuality and VCOPs; however, three conclusive mobility dimensions from the literature add clarity: (1) *the dual role of location*, (2) *the physicality of the environment* and (3) *the formative context* of the movement of people, devices and information.

In a mobile environment, location does not matter – and at the same time it really does. From a connectivity perspective, many applications can be carried out at different geographical localities (Kakihara, 2003), whether within urban spaces or at remote sites where “users get enabled to exchange and retrieve information they need quickly, efficiently and effortlessly, regardless of their physical location” (Hansmann et al., 2003, p. 13). While mobility and virtuality scholars tend to agree that “distance is dead” (Makimoto and Manners, 1997) for some work contexts, and that “distance matters” for others (Olson and Olson, 2000), mobility researchers place more emphasis on location as a consequential factor. Much of the work carried out by mobile workers is in fact highly location-dependent (Cousins and Robey, 2005; Wiberg and Ljungberg, 2000). Participation in MCOPs tends to happen at places where actual work is conducted, with mobile workers collaborating from client sites (e.g., while installing IT equipment), from remote structures (e.g., at garbage transfer stations) and even while moving (e.g., while driving). They each place different constraints on community participation.

This focus on the dual role of location in turn introduces the actual physicality of the environment as a dimension that matters more in MCOPs than many other communities. For instance wet, cold, dark or noisy places of work (e.g., for garbage truck drivers who work during winter nights) truly impact MCOP participation, but have little bearing in VCOPs that are defined less by environmental factors and more by how virtual spaces combine connections, devices, applications and services (Birkinshaw and Gibson, 2004).

Lastly, the movement of people and devices plays a more important role for community participation in mobile settings than others. Mobility is associated with the conscious, rational choice of people to move, to meander and to change location (Lilischkis, 2003; Mallat, 2007), often in a fluid, unstable way (Brown and O Hara, 2003) and at times unpredictable to themselves and to others (Kakihara and Sørensen, 2001; Kristoffersen and Ljungberg, 2000). Users' work radiuses and forms of interaction change as they make less use of relatively locality-bounded devices and applications. While people still wander (i.e., move about a building or specific premises), their use of technology increases particularly in times of visiting (i.e., temporarily staying at one place before moving on) and traveling in vehicles (Kristoffersen and Ljungberg, 2000). As individuals interact while they are on the move, they are often able to communicate in an uninterrupted fashion, in many ways without the other person knowing where they are or that they are in fact not stationary. Especially with the abovementioned importance of location for some mobile work tasks, the inability to know where mobile workers are has significant implications for participating in MCOPs and for managing mobile workers.

Based on the constructs introduced above, we define MCOPs as follows:

A community of practice becomes a “mobile community of practice” (MCOP) when its members conduct work, communicate with one another and participate in community work on the go. This means a) that many but not necessarily all community members visit, wander and travel extensively as part of their work, b) that they communicate with one another in person

and through mobile IT, and c) that, for work and community participation, location and movement matter in terms of their spatial, temporal and physical dimensions.

Today, more and more mobile environments enable virtual connectivity (e.g., through the increasing adoption of smart-phones), but this does not suggest that virtual environments necessarily conform to characteristics of mobile connectivity or vice versa. Accordingly, we agree that each type of community (COP, VCOP, MCOP) faces different realities, and that these are best examined separately (Dubé et al., 2006). Drawing from Blackler's (1995) research, mobility clearly shapes how mobile individuals develop and share knowledge that is *embodied* "in the practicing" (Nicolini, 2011, p. 611) of their mobile work and acquired by doing (Zuboff, 1988) rather than abstract rules, *encultured*, localized (Carlile, 2002) and socially constructed in their MCOPS and *embedded* in the relationships between technologies, roles and emergent routines. As the following case studies display, these types of knowledge, and the ways in which they are shared in a mobile setting, play an important role in creating the glue that connects and binds members within mobile communities of practice.

3. Researching mobile communities of practice: cases and findings

Methodology: In order to improve our understanding of the impact of ICT-enabled collaboration among mobile workers for the management of mobile employees, three empirical cases⁵ were studied over the course of one year. Case study research (Walsham, 1993, 2006) was employed as an appropriate method for a conceptual discussion of mobile work practices at their formative stages in which both practical experiences and situated context are important (Benbasat et al., 1987). As the following cases and their findings illustrate, only in-depth interviews and non-participant field observations of mobile workers who visited, wandered and traveled and their office-based colleagues could achieve this goal. Table 2 summarizes our cases and data collection.

Data analysis: In order to make sense of the mobile activities observed, empirical materials were logged whenever possible. Social semiotics was adopted as a mode of analyzing the text – the words, signs and symbols used in the field and recorded in the research notes, transcripts and sketches (Chandler, 1994; Hirschheim, 1985). Observations included spoken and written words, images, maps, haptic and deictic behavior or gestures that were often exchanged between researcher, mobile workers, their location-dependent colleagues and managers, etc.

Clearly, these texts were dependent on how individuals shared the meaning associated with them. As social constructs, they built frames of reference; they provided meaning in the lives of different individuals and defined their realities accordingly. As such, texts did not convey their meaning to the researcher, but rather demanded an active process of interpretation. Accordingly, their construction, observer impression and subsequent interpretation occurred within the contexts of the particular situations at hand. Observations were documented immediately (e.g., during communication with a driver in a waste truck, observations of MCOP conversations held via mobile phones, discussions in offices) or as soon as possible after the event.

The following three sections introduce our cases. In order to share the rich content, they each include subsections on the company, the case background and a summary of our findings.

3.1. Case 1: EZComp Inc.

EZComp Inc. sells IT hardware, software and services to its clients. EZComp's post-sales group (PSG) travels extensively to consult with clients, deliver, install and maintain mobile and fixed-location technology solution packages. PSG technicians are in the true sense mobile employees who work at client sites, and also on trains and in automobiles.

Recently, EZComp equipped PSG technicians with mobile phones, laptop computers and tablet computers in an effort to create more flexible teams and to improve ways to solve problems. Technicians were encouraged to use these to prepare reports, exchange emails, and access a corporate knowledge repository to troubleshoot any problems. Their devices were preconfigured with bespoke software to enable seamless communication among technicians of the PSG, but also with their EZComp colleagues and with third-party software and middleware suppliers. During initial interviews, managers reported that although they believed laptop or tablet computers were common tools among technicians, their analysis suggested that the vast majority of technicians relied solely on their mobile phones. Throughout opening talks with EZComp's PSG management it became apparent that there was a large amount of uncertainty as to how mobile work was carried out and how technology was truly used in day-to-day work.

In total, about 30 h of interview data with PSG managers and technicians were collected over a 4-week period. Some interviews were conducted in an office-environment at EZComp Inc., but since it was important to see how devices were used, we also observed and conducted semi-structured interviews with mobile workers on the go (e.g., at client sites, in transit, at restaurants).

EZComp's PSG mobile technicians indicated that their interaction with others was quite different from what managers had assumed. Technicians relied heavily not only on online chat, voice and SMS communication with their customers and with suppliers, but also on knowledge shared with colleagues from various departments and from other companies. Our observations revealed that mobile workers hardly used EZComp's bespoke programs on their laptops. Instead, they used

⁵ All company names and details were anonymized.

Table 2
Case study summary.

Case	Subjects and locations	Methods and formats
EZComp Inc. 1 July–14 October	Managers at EZCom offices PSG technicians at their offices, en route and at client sites	<ul style="list-style-type: none"> – 10 semi-structured interviews with five different managers – Interviews lasted 1 h on average and were conducted primarily face-to-face and followed up via telephone – 20 h of non-participant observation and semi-structured interviews of five technicians (4 h in length, on average)
Morrison Patrolling 1 March 31 June	National and regional managers at Morrison headquarters and at regional offices Security guards during ride-alongs in patrolling vehicles (night and day-shifts), visits at client sites, at restaurants and cafeterias, etc.	<ul style="list-style-type: none"> – 20 semi-structured interviews with five different managers – Interviews lasted 1.5 h on average and were conducted primarily face-to-face and followed up via telephone – 40 h of non-participant observation of five security guards, and when possible, of other COP members – Semi-structured interviews were conducted at the same time, ranging from 1.5 to 5 h in length
Grizzly Waste Management 14 October–7 December	Field and depot supervisors, traffic managers at regional offices, waste depots and tipping stations Drivers in waste removal vehicles, during visits at client sites, at restaurants and cafeterias, etc.	<ul style="list-style-type: none"> – 25 semi-structured interviews with seven different managers – Interviews lasted 1.5 h on average and were conducted primarily face-to-face and followed up via email and telephone – 45 h of non-participant observation of four drivers in their vehicles – Simultaneous interviews of the four drivers and of some of their community members

their technical expertise and administrative permissions to install Windows Live Messenger. This, in turn, allowed mobile workers to communicate with individuals they could not reach on EZComp's communication tool (e.g., family, friends and community members from other companies). Our interview data revealed that such unrestricted communication was at the core of how the mobile work was conducted, how practice-based problems with installations, etc. were solved and how stories were exchanged among members within a wider community. The popularity of IM (Instant Messaging) on laptops, evident in our data, challenged the managers' claim that their technicians almost exclusively relied on mobile phones during their work. Further inquiry revealed that it was customary for technicians to connect laptops and tablet computers through their 3G phones. This tethering procedure utilized the very high budget and fairly uncontrolled voice and data usage for their phones, and bypassed the rigid restrictions and monitoring processes imposed on the usage of other devices. In addition, streaming all connections through one device also meant that at the end of each month, technicians only needed to present and justify one telephone bill to their managers, not multiple invoices.

The behavior of PSG technicians puzzled their office-bound colleagues and managers. While it was a disappointment that the expensive bespoke software was not used, managers were positively surprised by how resourceful their mobile workers were. Managers were also pleased that their mobile technicians openly revealed details of their MCOPs and their creative work-arounds to them through our study, without fear of punishment or worry that their devices would be controlled more heavily. Managers articulated that the intention had never been to build obstacles for mobile workers, but to provide them with appropriate communication tools. They attributed EZComp's success in no small part to the effective work of the PSG team, which they believed resulted from the "train and trust" philosophy that governed their relationship with all mobile workers. As a result of our study, managers voiced their concern about how restrictive their own views of mobile work had been, and that they would work with selected technicians to revise EZComp's policies. In follow-up conversations, managers informed us that the discontinuation of the bespoke software was under discussion, permissions to install IM had already been given to all technicians and billing policies, etc. were changed to enable more community communication.

3.2. Case II: Morrison Patrolling

Morrison Patrolling, a private security company, specializes in patrolling its clients' properties around the clock. During each shift, mobile patrol guards travel by car, for hundreds of miles, to secure buildings, check the status of schools, patrol the perimeter of construction areas, etc. During so-called welfare-visits, mobile guards accompany customers, particularly at night, who require access to often-remote properties (e.g., warehouses).

Morrison Patrolling recently introduced mobile telephones to their patrolling guards, in addition to the traditional equipment (e.g., paper-based documents, flashlights). The intended use of the mobile technology was to enable managers to monitor the whereabouts of their guards, for their own security, but also to help dispatchers direct traffic and reassign guards to properties that required immediate attention (e.g., when break-ins were reported). Out of a worry that these guards would abuse the new technology for personal communication and entertainment, management imposed strict rules on its use. Initially, outgoing calls could only be made to Morrison's offices and clients. Every guard's phone log was checked at the end of

the month, numbers were verified and guards had to justify calls made to other numbers – until management recognized that such calls were indeed necessary for smooth business operations. Subsequently, calls that did not exceed a monetary threshold were considered a cost of doing business, and managers were quite content that the mobile technology was used according to these organizational rules.

The data were collected over the duration of 4 months. This included approximately 30 h of semi-structured interviews with regional managers and traffic dispatchers at Morrison, often followed up via telephone and email. We also spent more than 40 h as non-participant observers on ride-alongs with five different mobile guards during their day and the night shifts. Here, we were able to study how mobile guards truly conduct their work (e.g., at client sites), and very importantly, how they communicate with others (e.g., while driving and during breaks) to participate in their MCOPs.

Ride-alongs with patrol-guards revealed how the actual use of technology differed from managers' expectations. Patrol-guards regularly communicated with colleagues from previous shifts about the properties they had to patrol. But they also interacted with other peers who shared a common enterprise: taxi drivers, policemen, delivery drivers and dispatchers from other companies who also navigated the city as part of their respective occupations. Via mobile phones, these individuals kept each other informed about potential work related incidents (e.g., traffic jams, accidents, and even speed traps). Talks with guards revealed that, in order to circumvent being queried about expensive calls, they placed numerous short calls and asked community peers to return their calls – unlimited incoming calls meant that these calls would not raise any concerns at Morrison. In other cases, they would call each other to arrange meetings in person along their respective routes or used their own, personal phones to communicate freely. According to the patrol-guards, without the community-based information, they could not possibly navigate highly congested cities to secure all of the premises on time and to ensure that the service level agreed with clients could be upheld.

These mobile work practices were interesting to managers. For the most part, mobile workers completed their assigned stops on time and submitted their paperwork as required by the police, insurance agencies, etc. Managers and traffic dispatchers reported no problems when asked about managing their mobile workforce. With a sense of pride, managers even acknowledged their mobile workers' clever collaboration techniques and the curious choices of communication partners they made to complete their tasks on time. Managers had become aware of the unique use of mobile technology, but did not object since their guards did not violate organizational rules (after all, short calls were allowed, and the number of short calls was not limited). On the negative side, managers had concerns about the use of unlimited incoming calls and personal phones during work, and worried about how such practices might affect the attention guards could pay to driving and securing premises. Since managers recognized that only guards truly knew the terrain and the work in the field, they were particularly worried about the lack of ambition and initiative guards displayed with respect to providing feedback on how their routes, or even their occupation, could be improved. Throughout our study, a professional relationship based on task-completion rather than innovation persisted between mobile workers and their office-based colleagues.

3.3. Case III: Grizzly Waste Management

Grizzly Waste Management handles waste from industry, retail customers and the health and public sectors. Grizzly's drivers of bulk carrier vehicles service waste requirements from regular clients (e.g., large scale bakeries), and from one-time customers (e.g., construction projects). Their responsibilities involve vehicles maintenance, collecting full containers, tipping them at transfer sites, emptying them at landfills and delivering empty containers to customers.

Before the introduction of mobile devices, Grizzly did not know very much about how their drivers conducted their work, where drivers and waste containers were at any point in time, and whether the containers were full or empty. When clients started switching to the competition because of Grizzly's resulting scheduling problems, managers decided to deploy mobile technology to improve the tracking of containers and the data flow between mobile workers and traffic dispatchers. Now dispatchers could call drivers to determine which vehicle was closest to a site that needed to be serviced. Drivers, in turn, could update dispatchers after tipping or emptying a container. Mobile calls were not monitored, and as long as drivers kept calls to a short duration they would not be flagged. According to managers, the mobile phone driven system worked largely as intended – a perspective quickly disconfirmed.

For more than 35 h over the course of 2 months, we conducted office-based, semi-structured interviews with regional managers, field supervisors, traffic managers and depot supervisors to understand, from their non-mobile perspective, how mobile work was conducted. We also went on ride-alongs for more than 45 h, where we were able to observe the highly interesting process of waste management and interview the drivers to gather rich data on how they collaborated and coordinated their work with others.

This case study revealed the ingenuity with which members of a MCOP negotiate their shared enterprise. Our observations uncovered that, upon collecting a vehicle at the beginning of their shift (in the middle of the night), drivers would immediately contact other members of their MCOP. Surprisingly, these were often drivers from competing waste removal firms. According to a previously agreed-upon order, these community members called each other to compare details of their worksheets. Once a common list of "jobs" was created, a reallocation of tasks took place over the phone, until a commonly agreed-upon new list was created where drivers from competing companies would service each other's clients with their own containers. Of course, this meant that containers carrying the various firm-logos needed to be changed back, so that everything was in order and employers would not catch on when trucks returned at the end of a shift. A final round of telephone negotiation focused on where containers could be swapped, or left for other mobile community members to collect.

These “running-bins” were left behind barns, or hidden in plain sight, for instance on large construction sites. Garbage truck drivers had truly become knowledge workers who negotiated, within their MCOP, a secret practice that dramatically increased the efficiency of everyone’s work, and the time they could spend on breaks.

To managers, these mobile work practices provided difficult challenges when they learned that equipping mobile drivers with phones to improve Grizzly’s asset management problems had adverse effects. Rather than improving Grizzly’s ability to manage the flow of its containers, mobile phones were used to negotiate work-arounds that further hid where containers were, whether they were full or empty, on their way to or from a customer’s site or transfer station. Some capital-intensive containers even lay dormant in unexpected areas, and with the budgetary constraints for only few new container purchases and the number of customers growing quickly, this reduced the availability of containers to truck drivers considerably. New business opportunities had to be turned down as a result of MCOP activity. The actual mobile work practices also exposed Grizzly to previously unforeseen contractual and liability risks, for instance when a container from a different firm was delivered and caused contamination of a client site. Since the secret use of running-bins and the increased time on breaks required drivers to be very clever when they talked to their dispatchers on the phone, the information available for scheduling and traffic management purposes was also not reliable. In many cases, dispatchers suspected that driver lied to them, but had no unambiguous way of verifying their actual location. During our research, an “us-against-them” attitude clouded the relationship of mobile drivers in MCOPs and their office-based colleagues.

4. Lessons from the field

Throughout our study, it was evident that mobile workers developed unique sets of norms and rules for interacting within their MCOPs. For instance, among mobile guards, community calls always took precedence over other calls. In many cases, mobile workers suspended actual work tasks to talk to community members. In all three cases, insights into the actual context of mobile work revealed how creatively mobile technology was used for the process of self-organization and MCOP participation. In the collaborative relationships that emerged, all mobile workers were connected through their mutual engagement with the community.

The findings from the three empirical cases are similar in the sense that they confirm that with today’s increased focus on data exchange within geographically flexible work arrangements, community members shift their participation from physical sites to mobile socio-informatic spaces where ideas “socialize, escape and organize” (Välikangas and Sevón, 2010, p. 152) across space (Dix, 2000; Rosander, 2000), time (Ferscha, 2000), and context (Kakihara and Sørensen, 2001). As illustrated in the vignettes, these spaces spanned functional, hierarchical, and even organizational boundaries through mobile talk, instant messages, email, etc. MCOP activities were supported by creatively appropriating technologies (Wired, 2007) through installing software to support community participation (Case I), repeated, short interactions (Case II) or hiding the use of the technology (Case III). But although all cases revealed discrepancies between the intended and actual use of mobile technology, the impact of the different MCOP arrangements on the firms varied significantly. While some MCOPs outright violated orders (e.g., garbage truck driver’s who manipulated the system in their favor with running-bins), others respected organizational rules (e.g., Morrison Patrolling guards found creative ways to follow instructions) or even optimized the firm’s performance measures (e.g., collaboration of EZComp’s technicians within their MCOP to solve client-site problems).

These findings are intriguing, as there is no research on variations in MCOPs and how these impact collaboration among workers and organizations differently. Working from “contextual ambidexterity” (Gibson and Birkinshaw, 2004), in this section we examine the differences we observed in MCOP behavior and conceptualize their impact on organizations. We first introduce ambidexterity to justify our choices of the dimensions of “individual discretion” and “organizational alignment” to explain how MCOPs vary and then introduce our typology of MCOPs.

4.1. Ambidexterity

Organizations, in need of balancing conflicting demands associated with exploitation and exploration (March, 1991), incremental and discontinuous innovation (Tushman and O’Reilly, 1996, p. 24) and control and flexibility (Quinn and Rohrbaugh, 1983), often make either-or decisions at the expense of organizational effectiveness (Ghoshal and Bartlett, 1994). “Organizational ambidexterity” (Duncan, 1976; Gibson and Birkinshaw, 2004; Tushman and O’Reilly, 1996) suggests that “organizations have to reconcile internal tensions and conflicting demands in their task environments” (Raisch and Birkinshaw, 2008, p. 375) so that they can be effective and efficient in their “management of today’s business demands while simultaneously adaptive to changes in the environment” (Raisch and Birkinshaw, 2008, p. 375). Supporters of “structural ambidexterity” (e.g., Duncan, 1976) claim that organizations need to develop dual structural arrangements to separate clearly how each competing value is pursued (e.g., one business unit for incremental, one for discontinuous innovation). Contextual ambidexterity, on the other hand, recognizes “the importance of simultaneously balancing seemingly contradictory tensions” (Gibson and Birkinshaw, 2004, p. 209). In this sense, the organizational context shapes (i.e., facilitates or constrains) the ability of individuals, business units or entire organizations to become ambidextrous. As discussed above, mobile work activities and their context are often not separable (Decortis et al., 1997), and with respect to mobile IT “appropriate-

ness is almost always a matter of context” (McCullough, 2004, p. 3). Contextual ambidexterity proves to be particularly useful for unpacking context for mobility at work in general (Sørensen, 2011a), and for MCOPs in particular.

Gibson and Birkinshaw (2004) define contextual ambidexterity along two primary dimensions – as the behavioral capacity to demonstrate alignment and adaptability concurrently. *Alignment* refers to choices that lead to “coherence among all the patterns of activities”, so that the organization becomes efficient in its management of today’s business demands. *Adaptability*, on the other hand, relates to “the capacity to reconfigure activities [...] quickly to meet changing demands in the task environment” (Gibson and Birkinshaw, 2004, p. 209). We used these original constructs of adaptability and alignment to develop two dimensions appropriate for examining the context of mobile work – organizational alignment and individual discretion.

4.2. Organizational alignment

Our first dimension, “organizational alignment”, relates very directly to the use of alignment in contextual ambidexterity. We consulted the strategic alignment models in the Information Systems literature (Avison et al., 2004; Baets, 1992; Galliers, 1991; Kanungo et al., 2001), and define organizational alignment as: the degree of fit of mobile workers’ decisions and behavior in the field with organizational strategies, rules, etc. When organizational alignment is low, the behavior of mobile workers can seriously hinder a firm’s performance (Broadbent, 1998); when it is high, the actions of mobile workers support the firm’s mission, objectives and plans and positively impact organizational effectiveness (Ciborra, 1997). For instance, the behavior of garbage truck drivers who used running-bins was low in alignment to the organizational goals, whereas PSG technicians at EZComp who used mobile technology to solve client problems displayed high alignment with organizational goals.

4.3. Individual discretion

Our second dimension, individual discretion, relates to how individuals use their own judgment to divide their time between conflicting demands for alignment and adaptability (Gibson and Birkinshaw, 2004). In its original definition adaptability refers to the capacity to reconfigure activities dynamically to meet changing demands in the task environment (Gibson and Birkinshaw, 2004). This direct focus on the *ability* to adapt (hence adaptability) to changing demands in the *task* environment, however, has two important limitations for examining MCOPs. First, MCOP behavior, as shown in the case vignettes, is often not only about the *ability* to adapt, but also the *willingness*, or desire to reconfigure activities in the field (e.g., the garbage truck drivers’ use of running-bins and security guards willingness to change the sequence of the remaining site-visits). Second, per definition adaptability relates to changing demands in the *task* environment; however, MCOP participation often leads reconfigured activities to meet changing demands in the *community* environment (e.g., changing the sequence of stops en route to allow for coffee meetings with MCOP members). Although we agree in principle with adaptability, for the reasons above we chose the dimension of “individual discretion” for our typology of MCOPs.

We see individual discretion as a fundamental component of mobile work (Al-Taitoon, 2005; Pinelle and Gutwin, 2003) and define it as: the degree of freedom mobile workers exercise when they decide what should be done in a particular situation. From the literature (e.g., Chae and Poole, 2005; Finkelstein and Hambrick, 1990; Walsh et al., 2010), the term discretion, sometimes used synonymously with autonomy and locus of control, relates mostly to how mobile workers operate within a “zone of authority” (Barnard, 1938) mainly by looking at environments that enable or disable individual power to make decisions. In this sense, the degree of discretion mobile workers exercise in the field varies. It ranges from low, when mobile workers can hardly manipulate their environment or cannot do so at all, to high, when they can exercise high “latitude of action” (Finkelstein and Hambrick, 1990, p. 448) and significantly shape organizational practices and outcomes in the field. In our cases, garbage truck drivers at Grizzly and PSG technicians at EZComp, whose behavior differed substantially with respect to organizational alignment, enjoyed a similarly high level of individual discretion. Mobile patrol guards at Morrison Patrolling, in contrast, exercised a much lower degree of individual discretion when they made decisions in the field.

4.4. A typology of mobile communities of practice

When combined, these variations in individual discretion and organizational alignment produce a typology of four distinct types of MCOPs, which we labeled bureaucratic, adhocratic, idiosyncratic and anarchic MCOPs (Fig. 1).

A *bureaucratic MCOP* is defined by a low level of individual discretion exercised by the mobile worker, combined with a high degree of organizational alignment. Mobile workers here collaborate to find creative ways to comply with organizational rules, but without the ambition of challenging or improving them. Mobile workers in bureaucratic MCOPs have become too complacent and passive to drive organizational performance forward, they might even be afraid to make big decisions or to take risks even if they disagree with the rules imposed by their managers. For firms, this suggests that bureaucratic MCOPs are safe but stifle the innovative potential for radical or discontinuous improvements of organizational processes that could emerge from mobile work practices. The security workers at Morrison Patrolling are examples of mobile workers who engage in MCOPs in direct pursuit of the firm’s goals and objectives (high organizational alignment), without exercising a high degree of individual discretion.

Organizational Alignment	High	<p>Bureaucratic MCOP</p> <p>Mobile workers collaborate in bureaucratic MCOPs to find creative ways to comply with organizational rules, but without the ambition of challenging or improving them.</p> <p>Stifled innovation, but safe!</p>	<p>Adhocratic MCOP</p> <p>Dedicated mobile workers engage in adhocratic MCOPs to generate innovative processes that will benefit the firm, even if this requires bending some of its rules.</p> <p>High performance!</p>
	Low	<p>Idiosyncratic MCOP</p> <p>Apathetic mobile workers engage with others in idiosyncratic MCOPs without a clear mandate or desire to improve organizational practices or personal returns.</p> <p>Low performance! Likely inactive MCOP.</p>	<p>Anarchic MCOP</p> <p>Mobile workers in anarchic MCOPs are rent-seekers who create processes to maximize their own returns, even if this involves violating or breaking the firm's rules.</p> <p>Highly innovative, but risky!</p>
		Low	<p>Individual Discretion</p> <p style="text-align: right;">High</p>

Fig. 1. A typology of MCOPs.

In contrast, an *anarchic MCOP* is defined by a high degree of individual discretion and a low degree of organizational alignment. Mobile workers in anarchic MCOPs engage in highly entrepreneurial activities with their MCOP colleagues. As rent-seekers who collaborate in pursuit of maximizing their own returns, they experiment and create new processes, even if this involves breaking, violating or disobeying the firm's rules. For firms, anarchic MCOPs can be the source of highly innovative, possibly discontinuous activities; a "potent force for change" (Kanter, 2011, p. 76) that might dramatically improve organizational performance, that is if MCOP activities can be discovered. Nonetheless, they also introduce a possibly high degree of risk when mobile workers are "out of control". The garbage truck drivers at Grizzly Waste, with their creative use of running-bins, are an example of how mobile workers in anarchic MCOPs can use a high degree of individual discretion to defy organizational rules in order to optimize working conditions for themselves.

The *idiosyncratic MCOP* is the least likely one to subsist over time, as it exists when unconcerned, apathetic mobile workers engage with others without a clear mandate or desire to improve organizational practices or personal returns. It is plausible that an idiosyncratic MCOP is the remnant of any of the other three types. For instance, when mobile workers start to care less about exercising their freedom to make decisions in MCOPs (a decrease in individual discretion) or when they care less about following organizational rules (a decrease in organizational alignment), or both, there would be a diminishing reason for mobile workers to participate. We were unable to observe idiosyncratic MCOPs in our cases. Mobile workers at Grizzly and at Morrison, however, alluded to communities in their past where members hardly cared about aligning their work practices with organizational goals, and rarely used their individual discretion to improve their work practices. Although members enjoyed a joint enterprise and shared repertoire, there was little mutual engagement. This combination, although clearly being an MCOP, describes the lowest possible performance, with no lasting benefits or risks to the individuals, community or firm.

In an *adhocratic MCOP*, mobile workers achieve ambidexterity through a high degree of individual discretion to form decisions that are highly aligned with organizational goals and objectives. This MCOP type promises the best performance of the four types, where dedicated mobile workers collectively generate innovative processes that will maximize performance measures for the firm, even if this requires bending some of the its rules. For firms, this means that moderate risks are taken to improve organizational performance measures. It also suggests that empowered mobile workers might openly share any new processes, even shortcuts or MCOP practices with the firm. Technicians at EZComp are an example of how mobile workers in an adhocratic MCOP work together to optimize their performance in high alignment with organizational goals.

5. Strategic implications for managing workers in mobile communities of practice

Each type of MCOP presents different challenges and opportunities for firms. In idiosyncratic MCOPs, where members rarely exercise their freedom to decide what should be done in a particular situation, and are not particularly interested in aligning these decisions with organizational strategies and rules, firms need to investigate if the idiosyncratic MCOP can still be considered an appropriate environment. Should its members believe it to have the potential for developing themselves personally and professionally, the idiosyncratic MCOP is worth supporting with the goal of eventually allowing it to grow into an adhocratic type. However, challenges arise if members already feel disengaged from the MCOP. Further, during attempts of improving both dimensions (i.e., organizational alignment and individual discretion), firms need to be aware of the risks of not achieving high levels of both, in other words unintentionally supporting the development of an idiosyncratic MCOP into a bureaucratic or anarchic MCOP.

In bureaucratic MCOPs, mobile workers rely on their MCOP for refining and exploiting work processes within the rules and requirements set by their organization. These bureaucrats focus on efficiency and convergent thinking (Wadhwa and Kotha, 2006) to improve mobile work processes incrementally. Focusing only on organizational fit in MCOPs will likely lead to evolutionary changes to work processes. From an operational perspective then, bureaucratic MCOP engagement, with its focus on current needs for information and expertise, enables only short-term success. From a strategic organizational angle, however, this leads to long-term stagnation, vulnerability to technology and market forces (Andriopoulos and Lewis, 2009) and possibly self-destruction (March, 1991) as falling into a competency trap (Gupta et al., 2006) might destroy opportunities for the firm to discover new and innovative mobile work practices.

On the contrary, in anarchic MCOPs, mobile workers focus mainly on exploration when they collectively generate novel recombinations of knowledge. This is not to suggest that workers drift (Ciborra, 2000) without a clear understanding of their direction or purpose, but rather that they experiment to co-develop new ways of conducting business (Galliers, 2007). The innovative potential of anarchic MCOPs for discontinuous innovation is immense. Increasing discretion and allowing revolutionary change (Tushman and O'Reilly, 1996) to occur within anarchic communities allows organizational practices and processes to be reconstructed to position the firm for sustainable growth and competitiveness. But a narrow focus on exploration escalates risks (Gupta et al., 2006) and compromises the short-term goals of a firm (Birkinshaw and Gibson, 2004).

With the premise that “exploitation drives out exploration or vice versa” (Andriopoulos and Lewis, 2009, p. 697), the inherent tension is whether a firm's strategy aims at investing in its short term efficiency, or long term well-being. Mobile technicians in adhocratic MCOPs at EZComp were able to overcome this “success paradox” (Tushman and O'Reilly, 1996, p. 24) by using their individual discretion to install third party chat clients (an exploration-oriented mobile practices based on individual discretion) so that they could talk to MCOPs members about solving problems at client sites (an exploitation-oriented mobile practice geared towards alignment). This MCOP behavior lead to a relatively high degree of contextual ambidexterity and improved overall performance (Gibson and Birkinshaw, 2004). Consequently, in order to maximize the firm and worker performance, managers should strive to support mobile workers to transition into the upper right quadrant of our typology, the adhocratic MCOP. Only in this constellation can mobile workers truly be trusted to care about the well-being of the organization (by aligning their decisions and behavior with organizational strategies, rules, etc.), not just about their jobs and promotions. Through a high degree of individual discretion they can “catalyze improvements and innovations without waiting for instructions or sticking to the letter of a job description” (Kanter, 2011, p. 76).

Galliers (2011) supports that a focus on exploitation (here through high organizational alignment) and exploration (here through high individual discretion) may be facilitated by an environment that provides a supportive context for learning and interaction. In response to criticism (e.g., Galliers, 2011) that specific, actionable recommendations to assist managers in providing an enabling, supportive environment that might foster this sought-after ambidexterity are scarce, we now discuss the identification, creation, support and management of MCOPs.

5.1. Identifying and creating MCOPs

We argue that MCOPs likely exist in environments where practice-based knowledge is exchanged informally through paths that are, based on the mobility of work, often invisible to outsiders. As a consequence, the question that arises is how such “underground” community activities, especially those that are not commonly associated with knowledge-intensive occupations, can be made visible not only to managers who desire to support them, but also to community members who might be unaware of just how much they really rely on each other. Our research shows that quantitative network analysis tools (see Lipponen and Lallimo, 2001; Scott, 2000) are unlikely to be of value, based on the originality, resourcefulness and intelligence in the way that community members self-organize these communities (especially in anarchic MCOPs). Data in the form of war stories collected from mobile workers are more likely to unveil rich information about the contextual element of mobility and MCOP activity. Areas of inquiry could be the joint mobile enterprise (e.g., how workers talk about themselves, their work and their colleagues reveals their interpretation of their mobile domain of work), the mutual mobile engagement (e.g., what part of their work mobile workers describe as individual versus collective, location-specific or mobility-based can help discover the glue of a community) and even their shared mobile repertoire (e.g., the origin of expressions and problem solving tricks such as running-bins can help uncover connections to other community members).

Not all mobile work environments are equally suitable for the creation the desirable type of an adhocratic MCOPs, based on high individual discretion and high organizational alignment. Although communities may emerge in various paths of mobile organizational life, those that are highly knowledge-based may yield the most beneficial outcomes. Organizational knowledge is often seen as hard and soft (Kimble et al., 2001), with the former referring to information that can be formalized, structured and articulated (Lave and Wenger, 1991) and the latter seen as socially constructed and often tacit. As a result, it is important from an organizational standpoint to identify not only areas in which the amount of soft and tacit knowledge is high, but also where community-based knowledge (Wasko and Faraj, 2000) is needed to solve problems associated with the complexity of the mobile nature of work. Focusing on key individuals within the firm will help uncover community work. To create ambidextrous MCOPs, managers should aim to identify “newcomers”, who are eager to advance in their career with the help of MCOPs, and “old-timers”, who give more than they take from a mobile community. Their respective knowledge and pre-existing networks are key to identifying and creating MCOPs.

5.2. “Managing” and supporting MCOPs

The previous section talked about identifying individuals who can help create fertile environments for adhocratic MCOPs; however, creating the necessary context and managing such MCOPs is not an easy task. By definition, these communities develop organically; they do not need permission and are likely to occur even in the absence of managerial authorization, especially in mobile settings. Moreover, traditional management techniques might be seen as invasive or interfering in MCOP affairs. Elements of control and supervision are precisely those components of boundary maintenance and hierarchy stratification that are challenged by the boundary spanning ability and communication patterns inherent in mobile technology and MCOPs. Managing in a conventional sense might therefore restrict community engagement (Heiskanen et al., 2008; Lederer and Salmela, 1996), delimit organizational potential and destabilize the relationship between the firm, the mobile employees and their MCOPs. Therefore, support for MCOPs needs to be different from support for conventional organizational designs, structures and systems, where organic growth and “aliveness” are typically not primary design goals (Wenger et al., 2002). Managers who want to benefit from MCOPs needs to move from a mindset focused on controlling and *managing* workers to *facilitating* MCOP engagement through fostering high organizational alignment and individual discretion, both especially important for mobile activities.

Such a transition requires accepting that MCOPs emerge and grow over long periods of time and their benefits are not instantaneous. MCOPs rely on the aggregate know-how that exists within a community; they are give-and-take arrangements. Mobile workers must be given enough flexibility to contribute to community maintenance, although this may not provide immediate, direct benefits to the mobile worker. Consequently the outcome of any MCOP investment may be hard to measure in traditional terms. For a corporate environment used to indicators derived from cost and benefit and return-on-investment analyses, a move to allocating resources to communities that are not even visible, without expecting rapid direct benefits, may be difficult.

This raises the difficult question of what resources to make available (e.g., time, money, facilities, technology), and how to allocate these resources towards mobile settings that managers themselves do not know in detail. This decision is further complicated by a problem that is often new to managers used to constant requests for more resources. Too much attention from the firm and too many resources might suggest a corporate MCOP agenda that might suffocate interaction and smother community development and engagement. Small investments of resources may not only invigorate MCOPs and promote their activity and growth, but also remove existing obstacles without building up unrealistic expectations. Working with key community insiders can bring business and community issues to the MCOP and identify what organizational resources may be useful for its development. Once allocated, managers must remain in the background and allow the MCOP to exercise a high degree of discretion over resource spending to enable the potential of timely problem solving and “improvisational sparks necessary for organizational improvisation” (Brown and Duguid, 1991, p. 55) in the field.

But, as our typology shows, a high degree of discretion is of course not enough, as this might channel effort towards exploration at the expense of exploitation. Anarchic MCOPs might develop if mobile workers’ decisions and behavior are not aligned highly with organizational strategies, rules, etc. However, in a MCOP, alignment cannot be achieved with traditional control mechanisms, as was evident in all three cases. Rather, building an environment that is based more on trust between managers and community members than on direct control (Heiskanen et al., 2008; Hempel and Kwong, 2001), as well as trust between individual community members is essential. This is further complicated in mobile environments with few face-to-face interactions where people build trust naturally (Harrison McKnight et al., 2002; Ridings et al., 2002).

Maximizing the combination of high organizational alignment and individual discretion in mobile environments with low co-presence is particularly difficult. To this end, managers would be well advised not only to communicate their support for the community’s continued existence, but also to actively build opportunities for MCOPs to remain alive and active and to become adhocracies. For instance, building bridges between the managers’ own communities of practice and MCOPs encourages mobile workers to become peripheral participants in corporate decision-making. This involvement aims to address the “us against them” attitude that might exist in idiosyncratic, bureaucratic and anarchic MCOPs. Particularly inviting community leaders (or those on inbound trajectories mentioned above), allows the firm to introduce the business perspective to the mobile community. At the same time, involving these key MCOP leaders can give them a sharper sense of the strategic potential of their own, and of their career possibilities for managerial positions. For the MCOP, such interaction suggests an upward mobility between MCOPs and managerial communities for those who are active and who align moderately risky,

innovative discretionary activities with organizational goals. For mobile workers in anarchic MCOPs, an “amnesty” might need to be developed, where mobile workers can reveal their MCOP activities without the threat of punishment and sacrificing their own benefits outright. Finding appropriate ways to incentivize mobile workers to co-design new mobile work practices based on the entrepreneurial activities they developed in the field (Gray, 2000) might convince them to align their high level of discretion with organizational goals – moving them from anarchic to adhocratic MCOPs.

Mobile technologies play a critical role in the creation and maintenance of MCOPs; however, the assumption that the equipping mobile workers with mobile devices will automatically cultivate efficient MCOPs is unfounded. Technology by itself does not create knowledge, learning, communication or community development; however, a lack of access to mobile technology certainly reduces mobile workers’ community participation to rare occasions of co-presence, which largely limits their upward potential in their community and curtails the value the firm can gain from the MCOP. As mobile workers depend less on shared encounters at particular physical sites, organizations need to build opportunities for relationship-building in shared mobile socio-informatic spaces that include managers and other important stakeholders. For developing such inclusive social-informatic spaces, using IT that is appropriate for both, mobile and office-based contexts is paramount. By promoting an open channel where mobile workers and others can gather to discuss current problems and issues, or explore new ideas, tools, and techniques (Wenger et al., 2002), an environment is developed where mobile workers become part of the bigger community, where innovation incentives are built for contextual ambidexterity within adhocratic mobile communities of practice.

6. Conclusion

Our study shows that the diffusion of a growing variety of mobile technologies fundamentally changes how mobile workers communicate and how they coordinate everyday activities with each other and with office-based colleagues and managers. Even workers who are often considered “blue-collar” use mobile technologies very innovatively to participate in MCOPs. Despite how blunt the other tools of their work might be, through mobile devices these individuals can become genuine knowledge workers to whom hierarchical, functional or organizational borders simply do not matter. With an astounding resourcefulness, mobile workers negotiate the many paradoxes they face in the field, sometimes as individuals, sometimes as members of their MCOPs. Our findings also shed light on just how unfamiliar firms can be with respect to MCOPs or the importance of community participation. Across the three cases, our study revealed highly unrealistic managerial assumptions and expectations of how mobile employees conduct work.

Self-organized mobile communities have not yet been explored much in Information Systems research. Our contribution focuses on the “turbulence, uncertainty and dynamism in the competitive landscape” (Merali et al., 2012, p. 137) of mobile communities by first introducing MCOPs as a research construct (*vis-à-vis* traditional and virtual communities of practice). Based on contextual ambidexterity, we then presented dimensions of individual discretion and organizational alignment to examine how mobile communities of practice vary. In our typology of MCOPs, we argue that these variations matter, as they combine to form four very different types of communities, where mobile workers are innovative but self centered (in anarchic MCOPs), where they collaborate to conform (in bureaucratic MCOPs), where they are lethargic and without a clear mandate (in idiosyncratic MCOPs) or where mobile workers are dedicated to generating innovative processes to drive the firm forward in an ambidextrous fashion (in adhocratic MCOPs). We believe that these types are important for managers to consider as their impact on the firm varies in terms of the overall performance, the risk they introduce and the innovative potential they offer. We suggest that understanding these differences emphasizes how the potential of IT in corporations has shifted from simply supporting business processes to being an integral part of business strategies (Nolan, 2012), suggesting that managers devise strategies to optimize the overall value that different types of MCOPs can offer to the firm.

Mobility is on the rise and MCOPs are here to stay. Their impact on organizational performance will only grow as a result of the increasing spatial, temporal and contextual flexibility with which mobile workers negotiate the everyday demands of their occupations. We have studied MCOPs in three different organizations, with varying degrees of organizational alignment and individual discretion. We see applying our typology as a lens for examining how MCOPs vary within a single organization as a promising future research opportunity. Similarly, we believe that studying how knowledge-in-practice is developed and shared not within single MCOPs, but across the boundaries of different communities of practice (see, for instance, Carlile, 2004) as important for understanding mobile work.

We further believe that organizational alignment and individual discretion each exist along a continuum, not in discrete categories where mobile workers belong to exactly one or the other. In our typology, we considered the predominant behavior in the MCOP as a basis for developing the quadrants. We recognize that more granularity would improve our understanding of MCOPs. Likewise, examining how MCOP behavior can change over time, and from one type to another, could unveil interesting community participation dynamics and valuable implications for firms. For future research, unpacking the MCOP construct in more detail, similar to Dubé et al.’s (2006) work on virtual communities of practice, would bring finer nuances of MCOPs to the fore.

We have outlined only some suggestions of how organizations can identify, create, facilitate and support MCOPs. More research on enablers and inhibitors of individual discretion and organizational alignment promises to improve managers’ ability to create an environment where MCOPs can flourish and support organizational goals. We hope that our typology

offers a valuable starting point for these and other studies of MCOPs. To this end, it is our hope that this paper motivates more community-based research of organizations, individuals and mobile information technology.

Acknowledgements

The authors sincerely thank Bob Galliers and the three reviewers for their exceptional service. Their commitment and insights truly helped us improve this article.

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