

## Discourses on Mobility and Technological Mediation: The Texture of Ubiquitous Interaction

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### ABSTRACT

Mobility is more and more mediated, supported and transformed by technological artefacts and infrastructures. Especially technologies labelled as mobile, pervasive, ubiquitous or nomadic, show an interesting shift in the shaping of sociotechnical environments and mediated interaction. Starting from some recent contributions on mobile and ubiquitous computing, the paper attempts to draw connections between discourses and practices related to the technological mediation of mobility. The assumption is that discourses circulating in different public arenas shape core meanings attributed to technologies, beliefs about them and also directions of development for technological artefacts.

The discursive practices examined concern mobility-centred theories of globalization (academic discourse), the relationship between the media and mobility (mass-media discourse), and the designers' discourse, drawn from three settings of design and development in mobile/ubiquitous computing.

As a result, the concept of ubiquitous interaction is presented as emergent pattern of mobile communication and theoretical framework to propose questions for future research, considering how mobility and its opposite (immobility) can bring the emergence of mobile techno-elites entitled to travel both physically and virtually.

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Keywords: *Ubiquity, mobility, discursive frames, mobile communication, mediated interaction.*

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*"I know not from what distant time thou art ever coming nearer to meet me.*

*Thy sun and stars can never keep thee hidden from me for aye."*

(Tagore, 1913; 46)

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## 1. Introduction

The concept of what is far/near (in space and time) to us and the possibility itself of 'meeting' each other has fairly changed over time. As expressed in Tagore's beautiful verses, there is a mismatch in temporal and spatial distances as well as the desire to overcome them. Indeed, we could say history can be read through change, movement and displacement of people, objects and, increasingly, information, to the extent of considering modernity itself – and its globalizing face - as the product of flows, fluxes and changing landscapes.

Topics covered in this paper concern the way media and technologies shape the imagery of globalized societies through representations and devices qualified as *mobile*. These representations and devices make communication and interaction possible anywhere anytime, that means ubiquitous. The concept of ubiquity evokes a desire as ancient as humanness, that means overcoming spatial and temporal barriers so to reach the divine gift of omnipresence: 'being anywhere anytime' as opposed to the *hic et nunc* constraints of face-to-face interaction. Media history as history of social communication (Thompson, 1995) can be framed as a progressive extension of symbolic accessibility and interaction through time and space. In this sense, the current discourse about forms of computing labelled as mobile, pervasive, ubiquitous or nomadic (Lyytinen & Yoo, 2002a; 2002b; Greenfield, 2006), beside the nuances in definitions and classifications, shows a shift to a broader frontier in the shaping of sociotechnical environments and domestication of technologies (Williams & Edge, 1996; Silverstone, 1994).

Mobile computing and ubiquitous computing represent two sides of the same coin, what I define *mediatized mobility*. In fact, several media become more and more mobile through the convergence on the mobile phone as meta-device (Aguado & Martinez, 2006a); on other hand, mobility is increasingly mediated by portable/embodied technologies which are features of a widespread public discourse (Iacono & Kling, 2001). Mobility is not only mediated but also mediatized, being the topic of multiple discourses performed by different social groups.

The paper reviews literature in this field looking at how three groups (academics, the mass-media and designers) are engaged in envisioning a new type of mediated interaction ('ubiquitous interaction') where mobility and ubiquity are crucial key-words.

Their discourses represent people and information as increasingly 'on the move', and contribute to configure technologies so to support mobility in contexts and situations of

everyday life. These groups are considered as sources of public discourse, which is based on “the discursive practices – the written and spoken public communications – that develop around a new technology. Public discourse is necessary for particular understandings about new technologies to widely circulate” (Iacono & Kling, 2001, p. 110). The discursive practices examined in this paper concern mobility-centred theories of globalization (academic discourse), the relationship between the media and mobility (mass-media discourse), and the designers’ discourse, drawn from three settings of design and development in mobile/ubiquitous computing. The assumption is that discourses circulating in different public arenas shape core meanings attributed to technologies, beliefs about them and also directions of development for technological artefacts (Iacono & Kling, 2001).

These discourses concur to define the characteristics of current and future interaction, in terms of communication and coordination aspects, paying particular attention to spatio-temporal constraints and their restructuration through mobile and ubiquitous technologies (Green, 2002).

Eventually, the paper will try to use the concept of ubiquitous interaction as theoretical framework to propose questions for future research, considering how mobility and its opposite (immobility) can bring the emergence of mobile techno-elites entitled to travel both physically and virtually.

## **2. A World in Flux: Global Scapes, Networks and Mobilities in the Academic Discourse**

Prominent theorizations of the globalized society are based on images and metaphors of flux, where emphasis on change, mobility and a set of affiliated concepts (e.g., networks, flows, scapes) play a crucial role. In particular, mobility can be understood as “an evocative keyword (...) and a powerful discourse” (Hannam, Sheller & Urry, 2006, p. 1) to re-order interpretations of globalization and its cultural dimensions. Mobility as emerging paradigm in social and human sciences (Sheller & Urry, 2006) accounts for patterns of contemporary social change, driving new patterns in turn. What emerges from these discursive frames put forward by anthropologists of globalization and the translocal (Hannerz, 1992; Appadurai, 1996) as well as by social theorists (Wellman, 2001b; Castells, 1996; Urry, 2000; 2002) is the image and representation of a world in flux. Being this flux composed of loosely-bounded

networks (Castells, 1996; Wellman, 1999), global scapes or flows (Appadurai, 1996; Hannerz, 1992) and patterns of different mobilities, immobilities and moorings (Hannam, Sheller, & Urry, 2006) the world is seen as resulting from differentiated landscapes. These approaches to the world as 'in flux' draw a broader picture of the background which fosters discourses and materialities of mobile technoscapes and mediascapes<sup>1</sup>.

According to Appadurai (1996) the crucial innovativity of modernity comes from moving images meeting mobile audiences, or from mediascapes meeting ethnoscapescapes through fundamental disjunctures. The five dimensions (ethnoscapescapes, financescapescapes, mediascapescapes, technoscapes and ideoscapes) identified by Appadurai are intertwined across cultural boundaries. They suggest the idea of mobility as crucial to the production of subjectivity. However, emphasis on the individual characterizes all of the theories mentioned above, especially Wellman's (2001a) networked individualism and Castells's (1996) network society.

The shift from densely-knit, tightly-bounded communities to sparsely-knit, loosely-bounded, frequently-changing networks (Wellman, 1999) is associated with the rise of the Internet and ICTs. Such an association brings transformations of sociability, redefinition of concepts like community and interaction, along with new social patterns, namely networked individualism (Wellman, 2001b; Castells, 2001).

Castells's space of flows as "new spatial form characteristic of social practices that dominate and shape the network society" (Castells, 1996, p. 412) is disjunctive like Appadurai's global scapes: flows are meant to be "purposeful, repetitive, programmable sequences of exchange and interaction between physically disjointed positions held by social actors" (*ibidem*) and again mobility is crucial to its understanding and constitution.

The world so depicted is in flux as much as hybrid: it can be conceived of as a process, whose form is crucial to understand contemporary changes and globalizing trends.

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<sup>1</sup> These two concepts, drawn from Appadurai (1996), are complementary: mobile technoscapes are characterized as the set of platforms, arrangements and settings which contribute to shape mobile technologies ranging from the mobile phone as a tool and a medium (Aguado & Martinez, 2006a) to the architectures and networks, policy regulations and services (Ramos, Feijòo, González, Rojo-Alonso, Gomez-Barroso, 2004). Mobile mediascapes, on other hand, are constituted by the set of discursive and experiential frames which both perform the discourse on mobility as a central feature of globalized society and make the information flows mobile across physical and virtual boundaries, using mobile technologies. Technoscapes and mediascapes, therefore, are part of a recursive system of relationships where artefacts and discourses can either reinforce or contradict each other.

*“(...) Flux, mobility, recombination and emergence have become favored themes ...)  
Borderlands are often where the action is, and hybridity and collage are among our  
preferred words for characterizing qualities in people and their products.”*

(Hannerz 2000, p. 2)

Hybridity can be also found in Actor Network Theory, when emphasising heterogeneity – and heterogeneous engineering - as cramming social practice made of networks of humans and non-humans (Law, 1997). But it is also central to theories where networks and space of flows are seen as constituting and transforming sociability (Castells, 1996; 2001; Wellman, 2001b). Communication itself has a hybrid constitution since computer networks are social networks and the dichotomy between physical space and cyberspace is false (Wellman, 2001b).

All these theoretical approaches to globalization and social change share the assumption that contemporary societies are increasingly built upon processes or fluxes. The form they take (networked individualism according to Wellman, space of flows for Castells, global scapes in Appadurai's view, cultural flows and hybrids for Hannerz, mobilities in Urry's paradigm) differentiates the theoretical frameworks, but at the same time provides us with a multifaceted analysis of these processes. Whereas the two anthropologists (Appadurai and Hannerz) emphasize the hybrid and disjunctive 'nature' of culture, the three sociologists give us the conceptualization of a world of networks centred on individuals, not ending with them but performed by them through circuits where not only people do travel, but also objects, information, materials, and symbols.

The *fil rouge* here is the reference to media or technical means as shaping the flux: according to Appadurai, mass communication is central in making public spheres diasporic and creating disjunctures typical of modernity. For Hannerz technologies of communication increase cultural complexity, making it more and more independent from face-to-face interaction; ICTs extend and change sociability according to Castells and Wellman, whereas Urry highlights how mobility is increasingly linked with objects and information. This centrality of mediated communication and interaction in shaping the global flows makes worth analysing the relationship between the media and mobility.

### 3. The Media Discourse: Mediatized Mobility and Mobile Mediascapes

If moving images meet mobile audiences (Appadurai, 1996) we could say mediascapes are mobile by definition: they are mobile as they were born from the constant interweaving of social representations, discursive frames, people on the move. However, the sense in which I define mediascapes as mobile goes beyond this preliminary consideration.

Mediascapes are mobile as mobility is more and more mediated by technologies. It is supported, enabled and constrained by technological artefacts aimed at increasing/fostering mobility of people, objects and information. As a consequence, patterns of mediated interaction are increasingly based on, and emerging from, mobile technologies. In this sense mediatized mobility refers to the way the media (and interaction they mediate) become mobile and allow information to be 'on the move'. In fact,

*“Being mobile is not just a matter of people travelling but, far more importantly, related to the interaction they perform, the way in which they interact with each other in their social lives”*

(Kakihara & Sorensen, 2001, p. 33).

Last but not least, mediascapes are mobile as mobility and mobile technologies represent hot topics in the media coverage and advertisement (Aguado & Martinez, 2006b). The mass media perform a crucial role in selecting and setting up discursive frames to help their audiences to make sense of technological innovations and artefacts. Mobile phones and mobile technologies are not an exception in this regard. The media constitute a gatekeeper system through which values, beliefs and representations of a new technology are filtered and proposed to the audience of its potential users. Furthermore, with reference to the mobile phone, a specific role is played by the advertising discourse, “which does not mainly deal with technologies, prices or services, but with emotions (...), social situations of interaction (related to security, availability, personal identity), individual and collective experiences (fun, romance, friendship) or technology related values (such as efficiency or design)” (Aguado & Martinez, 2006b, pp. 1-2).

Mobility comes to be constituted through both mediascapes and technoscapes, discursive practices and technological artefacts: it is their joint action that makes mobility so relevant in the context of contemporary society at both a discursive and a material level.

Such a joint action is performed, on the one hand, by the globalized media which help to frame ubiquity and mobility as crucial key-words in the public debate. In this sense the media play a crucial role in setting up links between emerging technologies (mobile phones, ubiquitous technologies) and a certain social order, comprising specific representations of the social and of social interaction. Being 'on the move' is so part of the contemporary imagination that to some extent mobility (in the form of travel) becomes a right defining the individual citizenship (Urry, 1999). The other side of the joint action of mediascapes and technoscapes is performed through sociotechnical action as arena where different players (designers, users, managers, institutions, corporations) negotiate technical specifications, associating them to representations of social assets (Horton, Davenport, & Wood-Harper, 2005). In this respect, technologies are both discursive and material arrays circulating through public discourse as privileged channel to envision the future of interaction and sociability.

Therefore, it is crucial to understand how and why new technological artefacts are focused on producing mobile, ubiquitous and pervasive environments. They both resemble and increase nomadicity of contemporary life. At the same time, this production of technologies is imbued with powerful metaphors, models and representations of social interaction and communication.

#### **4. Mobile Technoscapes: The Designers' Discourse on Mobile and Ubiquitous Technologies**

Mobile technologies and nomadic information environments represent an open laboratory into which individual and collective actors (e.g. organizations) experiment strategies to cope with very advanced technological artefacts. Some trends can be drawn here: the convergence of relatively older media and information services into new devices (e.g. e-mail accessed through mobile phones, document downloading, tv access from mobile phones, wi-fi services and so on); the virtually 'universal' portability, and consequent reconfiguring of space time and place of such devices, which makes them different from other types of computing. In such a way mobile technologies draw boundaries for new or restructured social action and interaction. Mobile computing also calls for a redefinition of Information Systems design, development and appropriation, through drifting (Ciborra, 2000) not only from the

planned development of the technological artefact but also from organizational arrangements centred on older sociotechnical infrastructures.

Literature examined in the mobile and ubiquitous computing field shows how current research is oriented towards three main sub-fields. The first one can be identified as *ubiquitous computing through augmented environments*, aimed to built up everyday environments conceived of as surfaces for communicative interaction.

Here “ubiquitous meant not merely in every place, but also in every thing. Ordinary objects (...) would be reconsidered as sites for the sensing and the processing of information (...)” (Greenfield, 2006, p. 11). Ubiquity, embedded into what Greenfield (2006) labels as “everyware”, is still linked with the idea of mobility, as it “appears not merely in more places than personal computing does, but in more different kinds of places, at a greater variety of scales” (Greenfield, 2006, p. 46).

Ubiquitous environments are characterised by unobtrusive realisation which aims to transforms patterns and opportunities of mediated interaction (cf. the following section).

The second setting that can be identified as constitutive of mobile technoscapes is circumscribed by evolutions and innovations concerning *smart phones*, the so called *mobile web*, *wireless and mobile services*. A major contribution to this process has been the transformation of mobile telephony towards access and forms of communication which go beyond the phone itself, allowing different services and functions to be performed through the device (Ling, 2004; Katz & Aakhus, 2002). In particular, smart phones are increasingly conceived of as “universal remote controls for people to interact with various devices from their surrounding environment; they will also replace all the different items we currently carry in our pockets” (Iftode, Borcea, Ravi, Kang, & Zhou, 2004, p. 1). Therefore, mobile phones are increasingly the result of multiple convergencies and saturations which make them the meta-devices *par excellence* and digital Swiss army knives in the Information Society (Aguado & Martinez, 2006a).

This idea of a portable, pocketable, unique device allowing interaction with a wide set of environments/computing networks unveils the way designers of wireless and mobile architectures conceive mobile mediated interaction. As Akrich (1992) notices, inscriptions in technological artefacts are never mere technical specifications: they communicate representations of the users (Akrich, 1995), as well as the vision innovators have of the artefact and of its future use.

Building a smart phone working at once as a personal server, a personal assistant and the privileged plug-in to the surrounding environment, entails the project of universal, ubiquitous and equalizing communication.

The third setting is constituted by the so called *mobile social software*. Functionalities of these applications include

*“awareness of the locations of people who are socially connected to users, ad-hoc organization of people and groups, the creation of virtual meeting places (and) richer geographical environments supplemented by social network information (...)”*

(Melinger, 2004, p. 3)

The field of mobile social software, with its emphasis on location, contributes to re-contextualize the interaction, re-embedding it into spatial constraints. However, location-aware software discourse often assumes that interaction and connection are driven by technology (Pellegrino, 2006). Location also concerns one of the most important aspects of context in mobile communication, constantly experienced and performed by mobile users in mobile practices. Location based services, therefore, are also made relevant by the communicative needs of mobile actors realized in mobile communication (Arminen, 2005).

The three settings represent different components of contemporary technoscapes, emerging from the interplay of rhetoric performed in public discursive frames (which rely on metaphors of flux, constant transformation and mobility as showed in section 2), technological frames set up by relevant social groups around more or less shared meanings of technology (Bijker, 1995; Orlikowski & Gash, 1994) and multiple contexts where discourses and materialities contribute to the artefact domestication (Silverstone, 1994).

## **5. Ubiquity as a Metaphor for Interaction: Some Hypotheses**

Ubiquity as a ‘divine’ (non-human, or super-human) gift and privilege (that of omnipresence) seems to be more at hand of humanness than ever. As a root metaphor it drives an increasing amount of public discourses concerning technologies.

Ubiquity refers to some form of ‘infrastructural saturation’ (Bowker & Star, 2000) which can be recognized in the abundance of technical artefacts forming an ecology, an invisible infrastructure. The so called ubiquitous computing, as expression of an ‘everyware’ ideology, is exemplary of such a saturation (Greenfield, 2006).

When associated to interaction, however, ubiquity acquires new nuances of meaning. Therefore, it is not trivial to ask to what extent ubiquitous interaction constitutes a specific type of interaction and how it is different from the three categories analyzed by Thompson (1995), that means face-to-face interaction, mediated interaction and mediated quasi-interaction (typical of the mass media). Whereas face-to-face interaction is based on co-presence, shared contexts and a wide set of symbols (comprising non verbal communication, gestures and so on), mediated interaction narrows the range of symbolic cues, still adhering to a dialogic scheme, and makes contexts extensively accessible through time and space. Mediated quasi-interaction, on other hand, is mainly unidirectional. Where does ubiquitous interaction stay in this tripartite scheme?

We could say it is hybrid, as hybrids characterize the world in flux (cf. *supra*). The point in question here is how to define co-presence going beyond the corporeal dimension of face-to-face interaction. As Urry (2002, p. 1) puts it, “One should investigate not only physical and immediate presence, but also the socialities involved in occasional co-presence, imagined co-presence and virtual co-presence”.

Mobile devices which travel with us and follow us while being (im)mobile, allow the emergence of what Urry defines ‘virtual proximities’, “multiple networks, where people can switch from one to the other (...) through the shift to a personalised wireless world (...)” (Urry, 2002, p. 7).

Characteristics of ubiquitous interaction can be drawn from the literature examined insofar. The three discourses on mobility performed by academics, the media and designers, make possible to trace a path of what kind of interaction is envisaged by these social groups and how it is inscribed into technological artefacts aimed at mediating mobility.

Ubiquitous interaction is conceived of as a type of communication centred on individuals and their networks (rather than groups or traditional communities); it is extremely pervasive, to the extent of happening everywhere/every time, therefore simultaneous in space and instantaneous in time. Furthermore, it makes mediated communication more invisible, pocketable and easily taken for granted; it generates ambivalent micropractices of appropriation, especially with reference to patterns of microcoordination across time, space and contexts. Eventually, it fulfils the potential of virtuality, making the relationship between connectivity and interaction more direct.

All of these elements can be retrieved in the examples of new emerging artefacts illustrated in section 4. In particular, pervasivity and instantaneity/simultaneity can be

referred to augmented ubiquitous environments; individualisation, invisibility and constant connectivity characterize smart phones as well as wireless architectures, whereas ambivalences in coordination are typical of location-aware social software.

What follows is a set of theoretical statements concerning ubiquitous interaction, listed according to the actors performing it (par. 5.1.), the spatio-temporal patterns (par. 5.2), the integration in mediatized everyday life (par. 5.3.), ambivalences concerning coordination and appropriation (par. 5.4.) and the relationship between connectivity and connection (par. 5.5).

### **5.1. Ubiquitous Interaction and Its Actors: Individualisation and Personalisation**

The performers of ubiquitous interaction act on the stage of networked individualism, which has not to be conceived of as a collection of isolated individuals, but a social pattern which “seems to be built on what could be called tertiary relationships, or what Wellman calls ‘personalized communities’, embodied in me-centered networks. It represents the privatization of sociability” (Castells, 2001, p. 128). This emphasis on the individual is sustained and fostered by small, embedded mobile media labelled as ‘personal’, more and more individualised/individualising. The mobile phone is the medium qualified as ‘personal’ *par excellence*, centred on the individual and constituting a gatekeeping device towards the environment (e.g., the universal smart phone proposed by Iftode et al., 2004). This does not mean the individual is more isolated: like networked individualism, ubiquitous interaction supported by mobile and ubiquitous technologies constitutes a new social pattern.

In face of this increasing individualism, “the importance of a communication site as a meaningful place will diminish even more. The person--not the place, household or workgroup--will become even more of an autonomous communication node” (Wellman, 2001a, p. 4).

However, even if portability and wearability of the new ICTs artefacts make them more and more available to the individual, social and spatial contexts are still crucial and are constantly reconstructed with the help of these artefacts. These contexts are shaped by micropractices of use, characterized by specific spatio-temporal coordination (Arminen, 2005).

## **5.2. Ubiquitous Space and Ubiquitous Time: Simultaneity, Instantaneity, Pervasivity**

Socio-temporal structure is a fundamental dimension to analyze interaction (Thompson, 1995). Ubiquity seems to annihilate spatio-temporal differences, it questions categories of space and time, as well as the concept of place, more local and contingent than space (Brown & Perry, 2002).

Mobile phone communication especially affects the use of time and the role of place: it “modifies the presence and absence of individuals in social space, the social configuration of space and time, the implementation of the democratic process and the construction of the modal personality” (Fortunati, 2000, p. 9). Another important spatio-temporal effect is the distribution of presence in simultaneous interactions (Rettie, 2005).

The term “instantaneous time” is appropriate to ubiquitous interaction: the absence of delay increases the focus on what is immediate, so that “the future increasingly appears to dissolve into an extended present” (Urry, 2000, p. 128).

Simultaneity means competition but also co-occurrence between remote and co-present interaction, so that

*“when people are on the phone, there is a sense in which they are in two places at one time. This is particularly apparent for mobile phone communication, where mobility means that calls are likely to interrupt concurrent copresent interaction.”*

(Rettie, 2005, p. 19)

Of such an instantaneity/simultaneity, it is emblematic the slogan of a major player in the mobile phone industry. ‘Life is now’ is the synthesis of how an extended present becomes the measure of all things in the mobile, ever connected world of cell-based communication. In real-time, “neither time nor space seem to exist as distance between places and moments. Time as distance has become replaced by relationships, fundamental action, and the ‘trying out’ of all possibilities before actualisation” (Dennis, 2007).

In the case of augmented ubiquitous environments, the objective is to make mediated and communicative interaction possible anywhere anytime, or better everywhere every time, “everyware” in Greenfield’s words (Greenfield, 2006). This pervasivity, apparently so grounded into physical environments, is likely to have unforeseen and contradictory consequences, since interacting everywhere every time means blurred boundaries between what is considered appropriate to the public sphere and what is strictly felt as belonging to the private (Katz & Aakhus, 2002).

However, instantaneity simultaneity and pervasivity do not mean that time is squashed and perceived as equalized: since concurrent and different activities can be carried out at once on the move, instantaneity of time translates into “polychronicity of human activities” (Kakihara & Sorensen, 2001, p. 35). Indeed, the change mobile communication produces in place, space and time is more complex than making us independent from these dimensions:

*“Mobile communication does not “free” us from places, spaces and practices, but makes them communicationally available to other mobile networked parties, leading to a new, enriched symbolic texture of everyday life”*

(Arminen, forthc, p. 6).

### **5.3. Ubiquitous Interaction Makes Mediated Communication Invisible, Unobtrusive and Pocketable**

Mobile and ubiquitous technologies are embedded in the texture of everyday life, in at least two senses. First and foremost, this embeddedness passes through a process of ‘naturalization’ of artefacts, which renders them invisible and transparent to the user’s attention and sight. This means domestication (Silverstone, 1994) of such artefacts is especially linked to their (unobtrusive) materiality. Secondly, literally technology ‘disappears’, o ‘hides itself’, in our pocket, hand, body and the environment: as in the case of wearable computers, or augmented environments, we are surrounded by hybrid networks where interaction becomes less and less noticeable (e.g. when everyday surfaces become interfaces for interaction). This is very interesting in terms of how mediated communication in general comes to be perceived and managed: as pocketable communication, it stays with us without any interruption. Domesticating mobile and ubiquitous artefacts means to cope with different degrees of obtrusivity, embeddedness and persistence of communicational routines inscribed into material devices.

Both the body and the multiple environments which surround it are increasingly saturated with miniaturized and portable technologies: their mediation makes communication less and less dependent, or derivable, from the body-to-body original matrix (Fortunati, 2005). Ubiquitous interaction, therefore, saturates the environment with a potential of connectivity (cf. par. 5.5.) which makes communication more and more mediated through some kind of technological artefact. This potential is not immune from ambivalences and contradictions.

#### **5.4. Ambivalences of Ubiquitous Interaction: Micropractices of Use and Contradictory Patterns of Coordination**

When interacting with and through mobile (smart) phones, ubiquitous environments or location-aware software we do not face only advantages in terms of coordination, planning and organization of everyday life (Ling, 2004). Coordination can become more problematic because of systems devoted to increase autonomy and discretion of individuals. A trade-off between individual and collective sociotemporal coordination occurs in this respect (Shove, 2002).

These contradictory relations between mobility and coordination are confirmed in ongoing research on blackberries and mobile e-mail services. Appropriation of such services shows how micropractices of technology-in-use (Orlikowski, 2000) deal with contradictory requirements of continuous connectivity and asynchronicity, on the one hand increasing autonomy and freeing time, on the other hand introducing a specific dependence from the portable device.

Similar contradictions can be observed between the de-localization and de-temporalization potentially available through mobile and ubiquitous devices, and the constant need of social actors to situate their communicational experience into specific contexts and spatio-temporal patterns (Green, 2002; Arminen, 2005; Scifo, 2005).

Ambivalences emerging from these considerations allow to frame ubiquitous interaction in a more critical perspective, opening the field to the problem of accessibility and availability of such an interaction to social actors. Availability does not mean necessarily enactment of the interaction. In this respect, the way co-presence is re-configured through ubiquity is also ambivalent.

#### **5.5. Ubiquitous Interaction as Re-configuration of Co-presence: Potential of Connectivity vs Connection**

Ubiquitous interaction enabled by new technologies such as smart phones, augmented environments and location-aware software suffers less and less from what Heath and Luff (1991) call "disembodied conduct". Nowadays, potential of connection and extension of symbolic cues supported by mobile and ubiquitous technologies allow different forms and nuances of distant co-presence, making mediated communicative conduct more and more embodied. Notwithstanding this, face-to-face interaction continues to play a special role in ensuring connection and shared meaning across contexts (Nardi, 2005; Urry, 2002).

In order to frame the potential of ubiquitous interaction, however, we need to distinguish connectivity (potential to get connected to a specific medium or technological device supporting communication), from connection and interaction.

Going beyond a simplistic correspondence between richness of interaction and technical bandwidth of a medium, Bonnie Nardi (2005) reminds us that “to communicate with ease, we must come to feel connected to each other, we must experience mutual commitment to joint undertakings, and we must gain each others ‘attention” (Nardi, 2005, p. 91).

If connectivity can be defined as potential to access information and distribute it (De Kerckhove & Viseu, 2004), connection is both a pre-requisite and a result for continued interactions over time. Therefore, “a feeling of connection is a subjective state in which a person experiences an openness to interacting with another person” (Nardi, 2005, p. 92). Connectivity can either enable or constrain connection: more connectivity does not correspond necessarily to more connected individuals.

However, it is worth being reminded that forms of intermittent embodiment make virtual experience neither more nor less ‘real’ than those carried out in face-to-face modality. What ubiquitous interaction – as envisaged in multiple discourses and sociotechnical settings - makes possible is, in principle, the fulfilment of a potential. This is disclosed into ‘virtuality’ as a dynamic warehouse of endless chances/opportunities (to communicate). Making connectivity pervasive, in fact (especially in the case of augmented ubiquitous environments), opportunities to establish connection and interact increase in number and modality. However, it has not to be taken for granted that this connectivity will always by definition enhance fields of connection (in Nardi’s terms) or increase information exchange. Connectivity, connection and interaction still must be distinguished for their joint action be effective.

To put it differently, transforming the potential of connectivity into interaction so to establish a field of connection (comprising attention, commitment and affinity) is not automatic. Ubiquitous interaction, even if (or, rather, because) more invisible and easily taken for granted, involves an invisible, crucial work of maintenance.

## **6. (Un)coerced Mobility: Enquiring Mobile Techno-elites**

*“One man’s imagined community is another man’s political prison”*  
(Appadurai, 1990)

Ubiquitous interaction provides a theoretical frame to enquire mobile and ubiquitous artefacts, focusing on research questions linked with the discourses examined. The assumption is that these discourses have both continuities and discontinuities with current practices and interaction performed in specific contexts.

The five statements concerning ubiquitous interaction, therefore, can be translated into specific questions related to actors, spatio-temporal restructuration, unobtrusivity and taken-for-grantedness, ambivalent patterns of use, connectivity and connection.

Actors: Who are the actors entitled to perform ubiquitous interaction? Is mobility a constitutive characteristics of them? How are different mobilities mediated by technological artefacts?

Time and space constraints: How are time and space experienced through ubiquitous interaction? What strategies are put in place to cope with instantaneity and simultaneity of interaction?

Unobtrusivity and taken-for-grantedness: How do individuals and their networks cope with multiple portable technologies? Are these technologies more easily taken for granted than others? How does this affect their appropriation?

Ambivalent patterns of use: What is the balance between the enabling/freeing dimension and the constraining side of being “always on” and engaging in a continuous interaction with environments saturated by sociotechnical assemblies?

Connectivity/connection: Do actors exploit the whole potential of connectivity? How is this potential managed in terms of boundaries between public and private in everyday life?

Politics of difference (Adey, 2006) which emphasize how mobility is not understandable without its opposite (immobility), help to face with these questions. Two complementary compulsive trends, one towards mobility and the other towards proximity, must be considered:

*“(...) co-presence does not mean that resulting patterns of travel are uncoerced and equal in their volition by each of the parties involved. The power to determine the corporeal mobility of oneself or of others is an important form of power in mobile societies, indeed it may well have become the most significant form of power with the emergence of awesomely mobile elites.”*

(Urry 2000, p. 4)

In other words, the way we travel (physically and virtually) can be more or less coercive, more or less adequate to fulfil ambitions of physical and social mobility, more or less imposed by unhappiness, unsatisfactory conditions, or forced by specific

contextual and cultural constraints. Here it is important to remember once more how mobile mediascapes are shaped through “dreams of ‘hyper-mobility’ and ‘instantaneous communication’ [which] drive contemporary business strategy, advertising and government policy while also eliciting strong political critiques from those who feel marginalised or harmed by these new developments” (Hannam, Sheller & Urry, 2006, p. 1).

This inequality in accessing mobility suggests that

*“social-spatial exclusion is best viewed not as a state of affairs or an attribute of one or another social group but as an emergent property of the three-way interaction between social obligation, individual or collective resources, and physical infrastructure.”*

(Shove, 2002, p. 5)

When posing the relevant question ‘is there a mobile/mobility divide as there is a digital one?’ we should bear in mind this idea of exclusion as emergent property to focus on whom is excluded from what.

In other words, mobility constitutes a cultural object (Griswold, 1994), even more crucial in a society whose culture emphasises the right and the beauty of travelling.

The idea that everything is in flux and not to be part of this flux is socially disadvantaging (Shove, 2002; Hannam, Sheller, & Urry, 2006) rises the question of whose actors access more widely the right to interact with ‘distant others’ as well as with ‘ubiquitous environments’. For some groups of social actors entitled to travel both physically and virtually, the experience of dis-embodied and re-embodied co-presence could be more constitutive, at hand and available than for others. These groups constitute ‘mobile techno elites’, and their everyday social interaction is particularly mediated by pervasive, saturating technologies. Strategies of domestication these actors engage towards ubiquitous technologies like smart phones and wireless portable devices, and the way in which ubiquity as a metaphor for interaction is experienced, constitute materials for further research.

## **7. Conclusion**

Starting a conceptual journey into the world as ‘in flux’, this paper tried to unpack the social and cultural background nurturing mobile mediascapes and ubiquitous technoscapes as ‘building blocks’ of the globalized landscape of communication.

Multiple discursive frames oriented to depict a society 'on the move' show how mobile and ubiquitous artefacts emerge through negotiation and conflict, and play a central role in future technological trajectories. Three settings of shaping have been identified: augmented ubiquitous environments, smart phones and the mobile wireless web, location-aware mobile software. They concur to shape a new type of communication pattern, named as ubiquitous interaction. Comparing this type of interaction to mediated and mediated quasi-interaction, the following factors emerged as crucial: individualisation, instantaneity/simultaneity, invisibility and pervasivity, ambivalent micropractices of coordination, connectivity/connection. All of them circumscribe ubiquitous interaction as shaped not only by designers' representations, but especially through the media and the academic discourses about ubiquity, mobility and global transformations.

Ubiquity with its dream of omnipresence questions the concept of co-presence, highlighting how different patterns of mobilities and proximities come to be interwoven in contemporary society.

Ubiquitous interaction is proposed as a set of hypotheses about interaction with current and future mobile/ubiquitous technologies. Focusing on actors, time and space, invisibility, ambivalences and connectivity/connection, it helps to understand how the relation between mobilities and immobilities is experienced by specific groups of social actors constituting mobile techno-elites. The way they domesticate mobility through technological mediation, coping with invisible, pocketable artefacts, is crucial to analyze how communication and interaction get transformed in an increasingly mediatized everyday life.

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