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Appropriation of Mobile Cultural Resources for Learning

Norbert Pachler, Institute of Education, UK

John Cook, London Metropolitan University, UK

Ben Bachmair, University of Kassel, Germany

ABSTRACT

This article proposes appropriation as the key for the recognition of mobile devices — as well as the artefacts accessed through, and produced with them — as cultural resources across different cultural practices of use, in everyday life and formal education. The article analyses the interrelationship of users of mobile devices with the structures, agency and practices of, and in relation to what the authors call the "mobile complex". Two examples are presented and some curricular options for the assimilation of mobile devices into settings of formal learning are discussed. Also, a typology of appropriation is presented that serves as an explanatory, analytical frame and starting point for a discussion about attendant issues.

Keywords: Agency, Appropriation, Cultural Practices, Mobile Complex, Mobile Cultural Resources, Socio-Cultural Ecology, Structures

INTRODUCTION: NEW PHENOMENA REQUIRE NEW CONCEPTS

"It's fun and the best part was the comments I got from people, my family, my friends, like '*Oh my god your school has actually given you an N91 phone, how cool is that*'". Taken at face value, this statement made by a university student, who was engaged in 'off-site' learning (see the example later in this article), does not suggest a recognition of the mobile device in question as a resource for learning. There is a hint of a suggestion that smartphones can provide motivational support for some learners.

Yet, from our perspective, the above quotation reveals a considerable potential gain for formal education: the student reacts to the smartphone from the perspective of everyday life. She values the mobile device in terms of her social environment: she considers it to be cool. Other possible responses might be to consider it to be boring, too expensive or some other category relevant in that context. Therefore, we understand the student's perspective to be framed by her everyday life. This, to us, is self-evident as the prevalent site of cultural practices around the mobile phone is everyday life. And, we see this link to everyday life as a real potential as it opens up a vast number of instances of meaning-making in informal contexts to formal learning. At the same time it poses a challenge

for formal education as everyday life is socially structured by entertainment, mass communication, fashion, milieus, marketing, information transfer etc. Unsurprisingly, for the student the N91 is primarily a *cool* lifestyle resource and not a resource for learning. We posit that if educators recognize the learning with and around mobile devices within the context of everyday life, mobile devices could become a meaningful link between learning in formal contexts such as school and universities and learning in the informal context of everyday life.

Traditionally school, college and higher education (we use these terms interchangeably to indicate formal sites of learning and teaching) have been viewed as being quite separate culturally to the 'mobile complex'. By mobile complex we mean the transformation of the world around us, which is increasingly marked by fluidity, provisionality and instability, where responsibilities for meaning-making as well as other risk-taking have been transferred from the state and its institutions to the individual, who has become a consumer of services provided by a global market. We are also witnessing considerable changes in the consumption and production as well as current characteristics of the media landscape, such as participation, distribution, local and global content, ubiquity and multimodality. Against this background, are attempts to confine societally valorized learning into dedicated sites still appropriate and valid? From our cultural perspective, this division is increasingly artificial, even counterproductive. The gap between formal education and the mobile complex, we believe, can be overarched meaningfully by the process of appropriation. Mobile content and 'mobile activities' represent one possible pillar on which to rest a metaphorical bridge between the two. We know a lot about the appropriation of mobile phones by young learners (see Bachmair, 2007), but is it desirable to open formal education to these forms of appropriation, or is there a danger of them undermining traditional approaches to learning in formal contexts which are, after all, culturally important forms of appropriation and a considerable resource for social success?

Appropriation as Key Concept for Mobile Learning

We see appropriation as a generic term for all processes of the internalization of the pre-given world of cultural products. It also covers learning across the breadth of learning in educational institutions, i.e. in formal contexts, and learning in everyday life, i.e. in informal settings. Learning in informal settings goes hand in hand with media use in everyday life. We see learning and media use as modes of appropriation. The main focus in our discussion of appropriation is on learning with mobile devices. The field of mobile devices is characterized by media convergence and comprises specific structures, agency and practices, which we summarize by the notion of the 'mobile complex'.

The growth in projects on learning with mobile devices internationally, and their seeming success, suggests that the stance of schools worldwide of preferably not allowing pupil-owned mobile phones on the premises, and not considering them as valuable resources for learning, is likely to change sooner rather than later. It might be argued that we are not far away from achieving a critical mass of inexpensive, learner-owned devices that can provide access to learning. This raises the question what curricular functions could be delegated to them. The mobile phone does not fit neatly into the didactic tradition of audiovisual media for teaching and learning. In their 'theory of learning for the mobile age', Sharples, Taylor and Vavoula (2007) give good reasons why mobile media cannot just take over well-known curricular functions. They are just the tip of an iceberg that we call the mobile complex and they exist in a specific interrelationship with a social, cultural and economic world in transformation. Sharples et al. (2007) refer to the "dialectic relationship between learning and technology" (p. 231). With reference to Engeström's Activity Theory (1996), they describe learning as a culturally framed practice of communication within the structures of a sociocultural system: "Learning occurs as a sociocultural system, within which many learners interact to create a collective

activity framed by cultural constraints and historical practices" (p. 234).

In our theoretical model, that of a socio-cultural ecology (Pachler, Bachmair and Cook, 2010), we propose a view of school as cultural practices of teaching and learning into which the cultural practices of the use of mobile devices and their applications in everyday life need to be assimilated. We also view practices of learning in informal contexts as cultural practices. Because they take place outside the school, they are entangled with the structures of the mobile complex. Important for us is the fact that relevant structures come from mass communication. One such structure relates to the ongoing process of individualisation, which enhances the agency of users, e.g. through differences in their habitus of media use or their habitus of learning (see Kress & Pachler, 2007). Another agency aspect explores users' competencies in media use. Sharples et al. (2007, p. 235) emphasize activities in which mobile devices are used for learning. In Sharples et al.'s terminology people appropriate the structures through their conversational activities. Referring to Waycott's research from 2004, Sharples et al. explain appropriation in the following way:

When faced with a new tool, people examine both the possibilities and the constraints it offers. This leads to a process in which the users adjust the 'fit' of their tools to their activities. Sometimes tools will cause their users to change their own behaviour to accommodate a feature or shortcoming in the tool; sometimes users will shape the tool to suit their specific requirements. Doing either of these things may initiate further changes as the users begin to exploit the technology, hence the dialectical nature of the process.

The student comment at the beginning of this section is a verbal indicator of her appropriation of the mobile complex. Everyday life and the consumption of attractive commodities is the foreground of her appropriation. The mobile complex is reduced to consumption, *which is, of course, not new in the context of media use. Other possible aspects of the mobile complex, e.g. the new relationship of public and private spheres in the context of mobile and individualized mass communication, are irrelevant for her.*

In Figure 1, we propose a model for mobile device users' appropriative relationship with the mobile complex, which consists of three key components to be appropriated; structures, agency and cultural practices. If the appropriation of these components happens within the context of the school, we argue, it can lead to successful learning.

We argue that this model works as an ecology because it brings mobile resources to the fore. We see the conversational activities of appropriation as being orientated towards the mobile complex as resources for learning as well as, of course, for other purposes such as entertainment. One of the readily visible resources of the mobile complex is the mobile devices themselves, the hardware and their software, applications and tools. It is easy to demonstrate the learning options of a mobile mini-computer, which smartphones ostensibly are. Not as visible are other mobile resources such as user-generated contexts.

Appropriation of Cultural Products, Child Development and Learning

As noted above, our line of argument builds on a well-established school of theoretical thought even if traditionally the concept of appropriation is not directly linked to the discussion of resources. Appropriation is a key concept of modern pedagogy. In the emerging modern industrial society in German pedagogic theory 'appropriation' had a crucial function in linking curriculum with child development. In particular, Wilhelm von Humboldt's (1767-1835) leading idea was based on child development through the appropriation of cultural products. Apart from the term 'appropriation' (German: 'Aneignung'), which is still in use, the termi-

Figure 1. Key components of a socio-cultural ecology of mobile learning
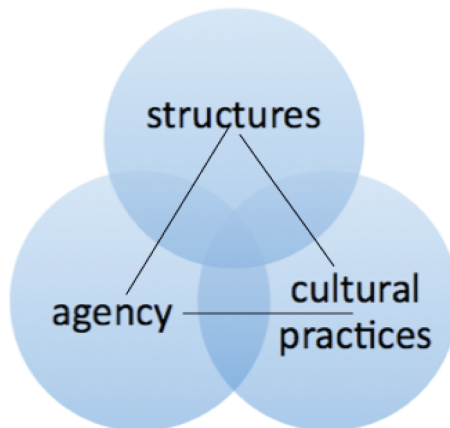
nology of the time was rather different: terms such as 'Bildung' (formation) or 'manifestations of the human spirit' were used instead of the more modern term 'cultural products'. Children develop their inner capacities by internalizing cultural products. For education and learning the notion of children internalising what the parental generation has produced, e.g. objectified knowledge, was essential. Today's terminology of the field of Cultural Studies operates with the term 'cultural products', which covers objectified knowledge as well as media. Smartphone such as the N91 are cultural products within the mobile complex and a prerequisite for internalisation. Appropriation of such a smartphone includes the interrelationship of hardware, structures of the mobile complex and its internalisation within cultural practices. User-generated contexts are also cultural products, which result from the appropriation of media convergence. These contexts exist in objectified form, for example, as a homework community on YouTube. The mobile videos function as cultural products, which can be appropriated by others through internet usage.

The notion of appropriation was also used by Vygotsky, albeit at a rather different stage of technological and social transformation of society, namely in a period of industrialization in the early part of the 20th century. Then models of conditioning were dominant. In the cultural and social frame of the 1920s and 30s Vygotsky defined the characteristics of human development in contrast to a development based on the instrumental conditioning of reflexes or on the extension of the body by tools for mastering nature (Vygotsky, 1978/1930, p. 19 ff.). According to Vygotsky, 'higher psychological processes' result from a relationship "between human beings and their environment, both physical and social" (p. 19). In today's terminology, these "higher psychological processes" are probably best thought of as 'culturally defined activities' and 'meaning-making'. Vygotsky considered social interactions, such as speaking, as transformation of practical activities, such as tool use. Through such processes of transformation, children can be seen to appropriate complex action modes in context (Vygotsky, 1986/1934, p. 146 ff.). Examples of these action modes in context are scientific concepts. The leading process here is the internalization, e.g. of the instrumental use of a tool: "An operation that initially represents an external activity is reconstructed and begins to occur internally" (Vygotsky, 1978/1930, p. 56 f.). Furthermore, the social situation of the external activity, such as the conditions for the use of tools, is internalized: "An interpersonal process is transformed into an intrapersonal one"

(Vygotsky, 1978/1930, p. 57). These processes of internalization depend on the stage of children's development: "The transformation of an interpersonal process into an intrapersonal one is the result of a long series of developmental events" (Vygotsky, 1978/1930, p. 57). Vygotsky (1978/1930, p. 57) summarizes this interrelationship of internalization and development as culturally depended: "The internalization of cultural forms of behaviour involves the reconstruction of psychological activities on the basis of sign operations".

We see the pedagogical challenge of today to lie in running with these ideas and transforming them in line with the cultural conditions of the early 21st century. This goes beyond simply updating the terminology used. Importantly, we see the challenge to lie in exploring child development in the context of the social, economic, cultural and technological transformations in the world. We summarize the results of these transformations using the notion of the mobile complex. The mobile complex results from the interdependence of structures, agency and practices (see Figure 1). The main task from the perspective of appropriation is to analyse the mobile complex in terms of its implications and options for learning. As we have noted above, all over the world schools have to date tended to ban mobile devices from their premises rather than viewing them as learning resources. The underlying intention has mostly been to try to guarantee traditional approaches to the appropriation of knowledge, which is legitimized by curricula. In our work on mobile learning and in this article we propose an alternative approach: we emphasise the importance of the cultural resources of the mobile complex, which are inextricably linked to mobile devices and the artefacts produced with, and accessed through them within a socio-cultural ecology.

The following section attempts a very short outline of the issue of mobile resources and their appropriation followed by a section in which we explore the complexity of appropriation in the context of the mobile complex and in which we attempt a typology of appropriation. Finally,

we try to exemplify our model of 'mobile appropriation' by way of two examples.

MOBILE LEARNING AND THE APPROPRIATION OF MOBILE CULTURAL RESOURCES

A narrow pedagogical analysis of mobile media, in our view, is an insufficient analytical frame, as is a narrow focus on the technological dimension of the recent trend towards 'mobilisation' through small and portable media. We believe that a broader, socio-cultural view is necessary (see also Conole, 2008). Instead of an emphasis on the transfer of content and information, we regard it as important to foreground processes of knowledge creation through conversation (see Sharples et al., 2007; Laurillard, 2007). Conversation is a situated social interaction in school as well as in everyday life that is inherent in the use of mobile devices. In this sense we extend the Vygotskian views presented above. But this educational engagement is also driven by the ongoing cultural changes, which lead us away from the traditional cultural practices of learning as defined in relation to classroom settings. Educationally, this development is discussed among others through the concepts of situated learning (Lave & Wenger, 1990) and collaborative knowledge building (Scardamalia & Bereiter, 2005). These learning activities have curricular relevance and we consider them as actual modes of appropriation. We draw on these perspectives in conceptualising learning as we agree both with the notion that learning, as it normally occurs, is a function of the activity, context and culture in which it occurs (situated learning) as well as with the importance of creating new cognitive artefacts as a result of common goals, group discussions, and synthesis of ideas (collaborative knowledge building). In addition, we also focus on how digital devices and media are mobilised to enhance the concept of meaning-making.

Shifts in socialisation, viewed mainly as a process of ongoing individualisation and as a dynamic of the risk society (Beck, 1992),

are supporting new characteristics of agency, especially individualised constructions of what 'counts' within socio-cultural milieus. Of particular relevance here in the context of the use of mobile devices is Beck's notion of manufactured risk, on which he sees a significant level of human agency operating in terms of their production and mitigation and which he deems to have an impact on social relations, in particular as regards their uneven distribution in the population together with their attendant impact on the quality of life of users. This perspective, we feel, provides us with integrative and analytical 'purchase' on interrelated social structures and cultural practices.

The concept of appropriation focuses on the processes learners engage in when using mobile media within existing or new cultural practices of everyday life or educational institutions. Here we encourage readers to think in terms of learners, rather than users. Central to our line of argument is the interrelationship between media use and meaning-making. Furthermore, the focus on socio-cultural practices attendant to the use of mobile phones is in our view central to a full understanding of the potential of mobile devices and ubiquitous mobile media for learning as meaning-making. As noted above, we see appropriation of mobile devices closely linked to learning with mobile devices. Learning for us is a process of meaning-making within social structures, cultural practices and agency. Agency manifests itself as the learner's social and semiotic capacity, i.e. their ability to form relationships with others (mediated by technology) as well as to make meaning and develop representations of the world using a range of sign systems such as language or images. We find the definition by Sharples, Taylor and Vavoula (2007, p. 225) attractive, who view mobile learning as "the processes of coming to know through conversations across multiple contexts among people and personal interactive technologies". However, we prefer to think of the processes of 'coming to know' to be located more broadly within communication which, we feel, rather than focussing more narrowly on the interpersonal, better captures the fact

that meaning-making is bound up in economic, socio-cultural, technological and/or infrastructural systems including the mass media and technological networks/infrastructure.

Our wider conceptual frame, which helps us analyse the appropriation of mobile devices namely that of an ecology, relies partly on Giddens' structuration theory (Giddens, 1984). The key questions here pertain to the change of mass communication from a transmission-based schedule model to an individualised model based on the circulation of content on demand within a wider system of media convergence. To this wider system belong very large content archives and ever-changing context for meaning-making. Within everyday life, mobile devices, especially the mobile phone, have become embedded and taken for granted by being appropriated as part of a process of individualised agency and within the practices of everyday life.

Mobile phones emerged in everyday life, its conversations and contexts, but were not specifically orientated towards 'knowing' but, instead, to other forms and pursuits of meaning. In general, we view meaning-making as the theoretical and practical link between the everyday life use of mobile phones and learning as 'coming to know'. Mobile phones can function as learning resources also within the cultural practices of educational institutions with their definitions of learning, although educational institutions, in particular schools, cannot be said to have quite accepted, let alone embraced this yet (see Hartnell-Young, 2008). Learning as process of meaning-making occurs through acts of conversation on the basis of a pre-given, objectified cultural world characterised by rapidly changing socio-cultural, mass communication and technological structures. All together the conversational activities within these structures form the appropriation of the mobile complex and its varieties of modes. One visible structural feature is the increasing prevalence of mobile media such as mobile phones, mini mobile PCs, iPods etc. Furthermore, as described in the introduction, appropriation allows us to conceptualize the

bridge between the informal meaning-making and the objectified knowledge associated with the formal curriculum. We view them merely as different modes of appropriation.

Summary of Key Aspects of the Socio-Cultural Ecological Approach to Mobile Learning

Within the context of our broader ecological theoretical framework, the following are key aspects of mobile learning.

Situatedness of Learning

Situatedness of learning is a very important facet for us, particularly in terms of pedagogical approaches around mobile devices. Learning depends on meaning, which cannot simply be transported by signs, images, words etc. Meaning is constituted by situations.

User-/Learner-Generated Content and Contexts; Collaborative Knowledge Building

The concept of active construction of content is an issue concerning the relationship of learners to the object of learning. Active construction of content does not depend on specific media, tools or applications, yet the multi-functionality of mobile devices, in particular the various modes of representation, offers particular affordances in relation to the production of content and the construction of knowledge. Invariably, the content thus created tends to be in the form of micro units.

We see user-generated contexts as an important dimension of mobile device use within the context of the mobile complex. We follow Dourish (2004) who views context from an interactional perspective. He foregrounds human activities as being constitutive also for contexts in the world of technology and describes context as an emergent property of interactions. We also argue the need to recognise the ongoing convergence of media and representation through mobile devices as affecting the nature of context.

Assimilation of Naïve Expertise of Everyday Life by Schools Through Conversational Threads

A key educational challenge is to find a way of harnessing the mobile cultural products produced by learners as a result of their naïve, native expertise for legitimised use within formal learning contexts. Compulsory schooling deals with students, who are experts within their life-worlds and who appropriate knowledge within contexts that are relevant to them.

One way this can be accomplished is through 'conversational threads', leading from learners' life-worlds into school. Conversational threads, which are determined and initiated by children or young people, are thematic options, which enable the connection of the life-worlds outside of school with curricular-based learning inside the school. One important contribution of school is to develop skills of reflexivity and critical awareness in naïve, native experts.

Reflexive Context Awareness

Broadly speaking, reflexivity can be seen as the process of interacting with, and relating to the inner, personal world and the outside, social world. We see reflexivity activated by appropriating socio-cultural structures, dominant agency patterns and pre-given cultural practices. Reflexive context awareness seems particularly important because practices relating to mobile device use can be veiled by their situated character and the generation of contexts tends to be hidden behind routines. Therefore, subjecting 'taken for granted', 'everyday' social practices and forms to critique, is essential and inevitable (for a broader discussion see Pachler (2009) and Pachler, Bachmair and Cook (2010)).

A TYPOLOGY OF APPROPRIATION OF MOBILE CULTURAL RESOURCES

Our typology of appropriation, based on our overall socio-cultural ecological model of mobile phone use in Figure 1, is shown in Figures 2-4. The figures (created in Inspiration 8™) attempt to capture visually some of the dominant aspects of appropriation mapped within our triangular frame. We discuss agency first here as it is centrally linked to the personal domain which has tended to be a key aspect in most discussions about appropriation in the context of mobile phones to date, e.g. using them to seek and organise information for various purposes, personalising their appearance etc. As noted earlier, in the main our model seeks to serve as an explanatory, analytical frame as well as a starting point for discussion about attendant issues, rather than provide a definitive map of the field. We also want to stress that there is insufficient space here to represent and discuss each of the sub-branches of the concept map in any detail and that we will, therefore, confine ourselves mostly to the main branches.

In the main, the following aspects are relevant:

- **Agency:** Young people can be seen to increasingly display a new habitus of learning in which they constantly see their life-worlds framed both as a challenge and as an environment and a potential resource for learning, in which their expertise is individually appropriated in relation to personal definitions of relevance and in which the world has become the curriculum populated by mobile device users in a constant state of expectancy and contingency (Kress and Pachler, 2007);
- **Cultural practices:** Mobile devices are increasingly used for social interaction, communication and sharing; learning is viewed as culturally situated meaning-making inside and outside of educational institutions and media use in everyday life have achieved cultural significance;

- **Structures:** Young people increasingly live in a society of individualized risks, new social stratifications, individualized mobile mass communication and highly complex and proliferated technological infrastructure; their learning is significantly governed by the curricular frames of educational institutions with specific approaches towards the use of new cultural resources for learning.

In short, in our ecological model of mobile appropriation we see learning using mobile devices governed by a triangular relationship between these three components: agency (the user's capacity to act on the world), cultural practices (the routines users engage in in their everyday lives) and the socio-cultural and technological structures that govern their being in the world. We see this interrelation as an ecology, which in turn manifests itself in the form of an emerging cultural transformation, and – as we will endeavour to show through our typology below – appropriation provides us with a lens through which to view and analyse these changes.

Agency: The Capacity to Engage with the Mobile Complex

The capacity of children and young people to engage with, from their own perspective, mass communication and technological structures leads us to a new reality of ubiquitous mobile media. The notion of 'appropriation' in the context of the use of mobile cultural resources, we argue, sharpens our critical educational and analytical perspective not only on the cultural practices of everyday life, but also on educational institutions from the perspective of the agency of users/learners as they form meaning with mobile media within new mass communicative structures, especially those of media convergence. Further, we can use the historical origin of appropriation from the beginning of the industrial society until today for discovering what is typical for the appropriation of

Figure 2. Agency – capacity to act on the world
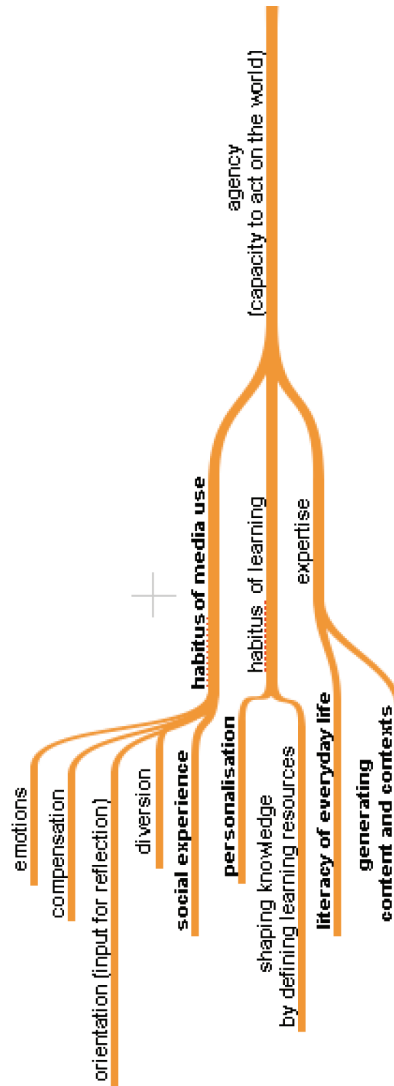
the mobile complex. This is a task for further investigation.

Our approach to socio-cultural development relates to the formation of identity and subjectivity, that is our concern with the processes of the development by users of a distinct way of being in the world in relation to mobile technologies. The formation of identity and subjectivity can be seen to be the result of socialisation, to lead to agency, which we see as the capacity to deal with, and to impact on socio-cultural structures and established cultural practices. Agency includes also the capacity to construct one's own life-world and to use media for meaning-making. Agency, the ability for users/learners to act on the world with and through the use of mobile devices seems central to a discussion of appropriation at the interface

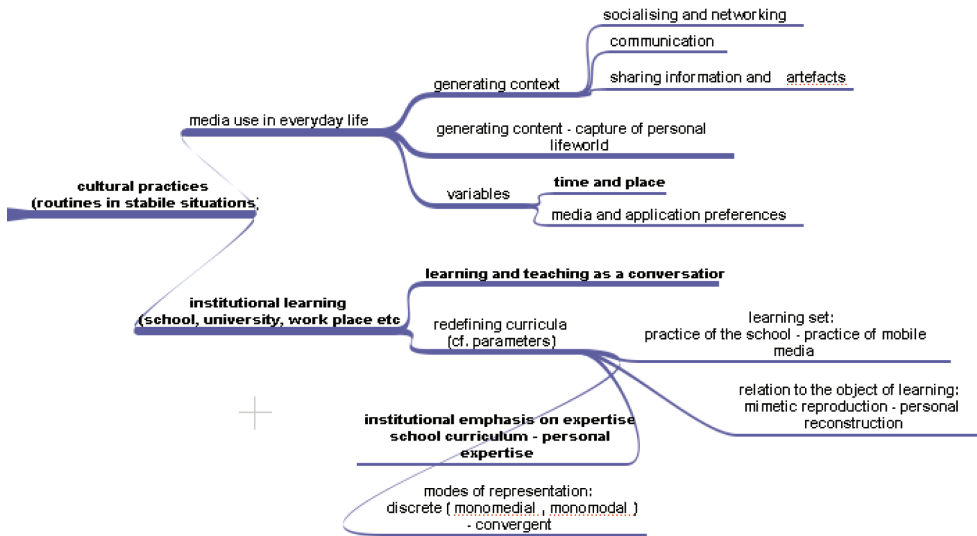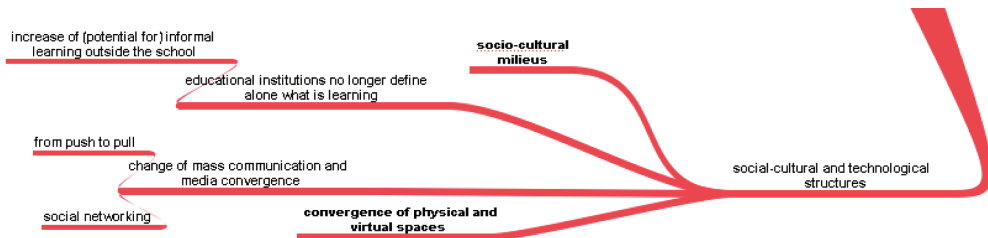*Figure 3. Cultural practices – routines in stable situations*

Figure 4. Social-cultural and technological structures

between formal and informal contexts. Our view of agency is represented in Figure 2.

Many users/learners now appropriate mobile devices, i.e. use them in relation to their own, rather than necessarily pre-determined ends, to perform a number of day-to-day functions around seeking, capturing, storing, organising and/or categorising information. This includes using the calendar, setting reminders and alarms, keeping contact details and searching the web. Mobiles can increasingly be used for entertainment, for example, playing music, games, listening to the radio or watching TV. Many people now use their mobile phones as their primary source for capturing media, in the form of photographs, videos and voice recordings. It is extremely common now at any event or occurrence to see people capturing it using their mobile phone. The mobile is becoming a tool for seeking and gathering information, whether it is accessing maps or the internet, calling someone for information or using learning materials. The number of characteristics of the mobile phone as a cultural resource appropriated clearly

increases with the sophistication of the device and the features it has. One's mobile phone is an inherently personal device (people rarely share mobiles in the economically developed world), and this can be enhanced by personalisation or accessorising a phone to put one's own personal stamp on it. This is mainly achieved by adding skins or covers and accessories, and by personalising ring tones, operating systems and menus as well as by adding wallpaper and, importantly, applications. In short, users can be said to be developing a new habitus of media use.

In addition to this new habitus of media use, a new habitus of learning around mobile devices can be seen to be emerging, characterised inter alia by new ways of users interacting with, being in and making sense of, as well as making meaning in the world in which they live. The molding, defining characteristic for this new habitus of learning emerges from individualized life-worlds as a frame for what is real and valid. It relates to who produces knowledge and how, and it describes the move from a world in which the text is an authoritative source of knowledge to one in which it is treated as a resource for the production of knowledge. Related to these developments is the emergence of new genres such as blogs and wikis which are themselves an expression of contemporary forms of social organisation, of distributed resources, information and power across life-worlds organised as lifestyles. The new habitus of learning has to be understood in the context of a world of fluidity and provisionality in terms of literacy practices of collaborative text-making and versioning (see Kress & Pachler, 2007, p. 26 and Pachler, Bachmair & Cook, 2010).

The domain of agency can be seen to be characterised by new schemata of expertise of users around the use of mobile devices, for example in terms of generating content and contexts as well as in terms of developing a new literacy of everyday life. In terms of educational policies around personalisation and the growth in social networking applications for mobile devices as well as cloud computing, these developments seem particularly pertinent to us. For example, in order to maximise the use of mobile phones it is necessary for users to develop a new set of literacy practices including, among other things, the ability to locate, evaluate and install applications that augment the basic functionality of phones and enable not just entertainment through games such as Sudoku, or information access, storage and retrieval such as service location (banks, coffee shops, cinemas etc in the vicinity), RSS feed readers, audio recorders, news channels etc., but also communication tools such as social networking applications (e.g. Facebook, Twitter, blog tools, Wikipedia clients) as well as cloud computing tools (e.g. Google docs). Increasingly, mobile phones also cater for more traditional literacy practices such as reading books with the number of (animated) (children's) books being on the increase (e.g. iStoryTime at http://www.istorytimeapp.com or Stanza at http://www.lexcycle.com/). Young people tend to develop practices around the use of these tools playfully and they are governed by new patterns of expertise which can, and we would argue should, be made fruitful for learning in formal contexts.

Cultural Practices of Mobility, Learning and Media Use

We now turn our attention to cultural practices, by which we mean routines in stable situations. In this sub-domain, we distinguish between media use in everyday life and institutional settings, be they school, university, the work place etc. Our view of cultural practices is shown in Figure 3, though we can only provide some indicative examples of these in the space available.

In the context of the appropriation of mobile cultural resources for learning media, the everyday use of personally owned, multifunctional mobile devices with ubiquitous connectivity is particularly important to us. In fact, we believe it to be one of the defining features and the key to overcoming the barriers that we have seen inherent in many previous technologies and devices. Ownership allows for qualitatively and emotionally very different kinds of relationships with technologies and

devices, and their multi-functionality, porta-bility and ubiquitous connectivity allows for the generation of content by capturing users' personal life-worlds as well as the generation of contexts for learning through socialising and networking, communicating and the sharing of information and artefacts across time and place. It also allows for personal media and application preferences. No longer is the learner dependent on the equipment and software made available by educational institutions, instead they can exercise their own choices. In fact, it is especially this increasing choice which in our view represents a considerable challenge in so far as the proliferation of devices, tools and applications at times gets in the way of the ability of users to make sense of the wealth of possibilities as well as of the interoperability of services.

In terms of media use in everyday life, socialising and networking are important pur-poses of communication. We communicate in order to find out train times or carry out a work task and we socialise to build friendships and other relationships.

The communicative potential of mobile devices together with features such as context-awareness potentially support distributed cogni-tion, which refers to a branch of cognitive sci-ence which puts forward the idea that knowledge and cognition are not confined to the individual but are, instead, distributed over networks. In a context of ubiquitous connectivity, inter alia through mobile devices, we increasingly draw on distributed information in our actions on the world as well as processes of knowledge-building and meaning-making of the world. The notions of acting on the world through the use of mobile devices and of distributed cognition leads onto the characteristic of learner-generated context, by which we understand contexts 'created by people interacting together with a common, self-defined or negotiated learning goal'. "The key aspect of learner-generated contexts is that they are generated through the enterprise of those who would previously have been consumers in a context created for them" (Wikipedia, 2008). As Cook (2007) points out,

a 'mobile learner-generated context' can be seen as socio-cultural learning activity "conducted by learners who may be communicating or individually reflecting 'on the move' and who, in the course of a dialogue with another person or interaction with multimedia resources, raise questions that create a context; when an answer to this context-based question is generated this can give rise to knowledge". The relevance of contexts for formal learning was put on the 'didactic agenda' by means of the concept of situated learning (Lave & Wenger, 1990). Ap-propriation of the mobile complex enhances didactic endeavours around situated learning by integrating mobile and user-generated contexts.

Personal networks at all levels can be built and sustained (family, friends, work, college) through keeping in touch through telephony, SMS, email, arranging meetings and so on. Interpersonal activities can be extended by sharing digital media with others, such as photographs, ring tones (via Bluetooth or MMS for example). An interesting example of socialising and networking is offered by Jacucci, Oulasvirta and Salvaara (2007), who discuss the contribution of mobile phones in the creation of technology-mediated memories in constructing shared experiences amongst spec-tators of a rally. They call this user genre 'active spectatorship'. Acceptable behaviour links to social norms in the context of wider cultural practices surrounding the use of mobile phones. For example, it is considered impolite in the UK to hold extended noisy personal conversations or play music through the speakers on crowded public transport. That does not mean to say this practice is uncommon. Thereby, the traditional regulation of public and private still applies, but not the features of mass entertainment or individual media use, in which the notion of being 'disturbing' is not in the foreground. Another example is the removal of mobile phones from school children as they enter the school, even though these devices could be used meaningfully for learning (for a discussion see Pachler, Bachmair, & Cook, 2010). Health and safety issues can have a negative impact on

appropriation, for example fears of radiation might limit use, or use in public spaces might be restricted because of concerns of mugging and theft. However, some people feel safer with their mobile phone, as they can make contact with someone if they need help. One student in a study we conducted (see Cook, Pachler, & Bradley, 2008), for example, noted that she used the mobile phone to talk to a friend when walking home alone at night so she wouldn't be afraid. The mobile phone, in this example, assumes a very specific role in relation to (perceived) personal safety and it becomes an integral part of the life-worlds of the user. It is her personal mode of appropriation not to feel afraid with her mobile in her hand.

Increasingly, mobile phones are used by their owners to document their personal lives and share digital artefacts with an international audience on services such as Facebook and YouTube. By capturing episodes from their everyday lives they create cultural artefacts, which they afford particular significance even though they might seem rather ordinary to everyone else. Yet, by being captured and made tangible and shareable these events achieve a certain status and permanence and can become the focus for later discussion, reflection and analysis. They also allow the user to have a very different self-image and documentary history of their lives and contribute to (multiple) identity formation. Further, appropriation, which is constitutively related to events, leads to new mobile contexts.

Appropriation of mobile cultural resources in the context of institutional learning clearly relates to the need to redefine curricula and attendant pedagogical scripts, i.e. it is a question of how institutions go about organising themselves in order to make the use of new technologies and attendant practices possible in a meaningful way. A key aspect of the re-definition of curricula pertains to the fluidity and provisionality of the world around us. Fixed curricula informed by old canons are arguably no longer fit for purpose in school contexts. The teacher and the school are no longer the gatekeepers of knowledge and the personal ex-

pertise of students developed outside education in formal settings need to be taken seriously and aligned with learning, teaching and assessment inside them. Similarly, traditional relationships to the objects of learning, e.g. internalisation of transmitted knowledge and its mimetic reproduction sit ill-at-ease with the world of social networking and personal construction and co-construction of knowledge, purposing and re-purposing of reusable learning objects. Equally, in particular in relation to skills, traditional teacher-centred approaches supported by 'old' technologies are increasingly at odds with the socio-cultural practices afforded by mobile media. Redefined curricula are also becoming necessary in view of the potential of new technologies to represent knowledge in multimodal and multimedia ways. Images, sound and animation as well as digital augmentation all contribute to a potentially much richer understanding, e.g. of underlying principles, purposes or connections between various and diverse knowledge components.

The potential of mobile devices also accentuates the need for changes in the relationship between teachers and learners as well as learners and their peers. As has been noted already, recent pedagogical frameworks foreground the importance of conversation in teaching and learning (see Laurillard, 2007; Sharples et al., 2007). Mobile devices offer huge potential in enriching traditional interactions between the key stakeholders within the classroom as well as in terms of bridging the gap between the classroom and the life-worlds of students and they allow for expertise from the world of work etc. to be brought in. One example is the use of SMS for asking questions and collating feedback in a teacher-led context (Scornavacca & Marshall, 2007).

In short, educational institutions need to give serious thought to how they plan for, support and integrate emergent technologies both in terms of their infrastructure as well as, arguably more importantly, in terms of their educational 'scripts', i.e. their cultural practices. Not appropriating mobile devices as cultural resources in our view is not a sensible option

as it runs the risk of increasingly alienating young people from an important aspect of their socialisation, their formal education.

Social-Cultural and Technological Structures of the Mobile Complex

Our discussion of a typology also needs to take account of the social-cultural and technological structures within which appropriation of mobile cultural resources takes place. On the one hand, we need to be cognisant of the challenges inherent in increasingly individualised risk in modern society, which is played out at all levels including in the context of mobile device use. For example, what mobile/cell phone service provider contract to choose and why? What does the small print of the user agreement of particular services and applications say and what are the implications, for example in terms of privacy, ownership of personal data etc? At another level, the individualisation of mobile mass communication, the affordances of the emergent pull facilities and social networking tools and applications and how they are being used and integrated into social practices is of relevance here as is the way they link to the wider technological infrastructure characterised by media convergence. Our view of social-cultural and technological structures is shown in Figure 4.

Of particular importance for the appropriation of mobile cultural resources in relation to formal learning is the fact that educational institutions alone no longer define what learning and knowledge are and they are certainly no longer the only (or even the main) location where learning and knowledge can be accessed and take place. How do those former gatekeepers of knowledge and learning respond to these significant changes? How do they appropriate mobile devices?

There is also of course a new social stratification leading to at-risk learners with their own situated expertise. A key feature is the socio-cultural segmentation by milieus and lifestyle with their related learning attitudes and media literacy (see Bachmair, 2007). In short, young people develop patterns of media use according to their social milieu and, depending on which milieu they belong to, they are located closer to or further apart from the dominant cultural practices of educational institutions and, by implication, stand a relatively stronger or lesser chance of doing well in school. Elsewhere (see Bachmair, Pachler, & Cook, 2009 and Pachler, Bachmair & Cook, 2010) we describe the case of Cyril, a German youth who, whilst displaying clear patterns of expertise at the leading edge of the use of new technologies for identity building and meaning-making, cannot capitalize on them in terms of success measured by traditional validation mechanisms such as exam results. In addition, his expertise brings him in conflict with the law as his attempts at positioning himself in relation to the world around him through creation and publication of digital video artifacts was deemed to be offensive and inappropriate.

EXAMPLES OF APPROPRIATION

We now present two examples of appropriation, which we relate to (aspects of) our framework. The examples are offered as a mere indication how the framework can be used for analytical purposes both at a conceptual as well as at a practical level.

Higher Education Students Engaged in 'Off-Site' Learning

In a recent study in Higher Education (Cook & Bradley, 2007), students visited an 'event' as part of a marketing assignment for a postgraduate module called 'Events and Live Media Industries'. The 12 students had to work in groups to prepare for a multimedia presentation, and each student was loaned a Nokia N91 phone to help them with the task. Each phone came pre-loaded with a simple mobile learning object called 'events checklist'. Thus the assignment task required the students not only to gather data in the form of video or audio clips and photos,

but also to answer certain questions (i.e. fill knowledge gaps) that were posed by the events checklist. Thus groups of learners were using the smartphones 'off-site' at large events and exhibitions in London to gather content and information for their marketing assignment. The educational experience was structured so as to investigate appropriation. Other tools available were mediaBoard, LifeBlog, YouTube (suggested by the tutor) and MSN (used by learners). Furthermore, there were 'study tips' (see the screen shot in Figure 5), i.e. the texts they received from their tutor.

Students were interviewed in groups (Cook & Bradley, 2007) and extracts from this data are briefly analysed below using our typology.

1.   Well we were walking around and observing the theatres of the event and trying to get the most images [that] we could get, and videos, and even sounds. We tried first to observe with our own eyes a little, to pick up what we thought was important for our presentation, and for our observation of the event.

2.   Its fun and that the best part was the comments I got from people, my family, my friends, like 'Oh my god your school has actually given you an N91 phone, how cool is that'. And then when they found out that [the tutor] could text

us 'Oh my god, a message from the [tutors name]'. So that was really cool.

In quote 1 a learner from this study is outlining her group's reflective approach to gathering content off-site for the assignment. The phrase "We tried first to observe …" indicates that some meta-cognitive monitoring and self-regulation (i.e. reflection on the fly) may have been employed and, we suggest, this is indicative of the fact that appropriation was being initiated. The learners successfully incorporated the phones into their learning practice through their agency on the task. We interpret quote 2 as an indicator that the phones were seen by the students as 'cool' or 'fun' or even 'gorgeous', and that this can act as a hook to motivate the learner to appropriate the device and incorporate its use within their learning practice. Further, everyday life is framing her appropriation.

3.   We were holding many things at the event, like our bags, we had a carrier bag with all the leaflets and everything in so our phone was already out and we were taking pictures so we didn't have to look into our bags to find paper or the module booklet, so it was convenient in that sense.

Figure 5. Study tips from the tutor
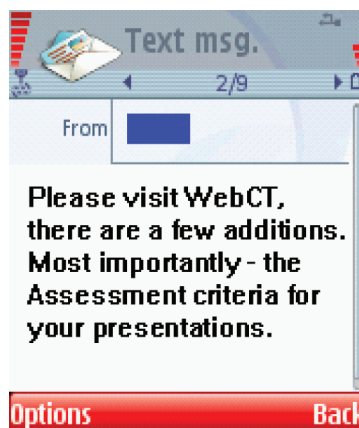
Quote 3 highlights the ergonomic flexibility of using your mobile phone whilst gathering content and data on the move at an event (convergence of physical space node in typology). There is no need to refer to an additional device (e.g. camera, video camera, PDA) because you have the phone in your hand anyway, ready for phone calls, etc. The phrase "we didn't have to look into our bags to find paper or the module booklet" is interesting. We take this to be the learner referring to the events checklist, which resided on the mobile phone. This is a simple learning object that contained prompts to remind students about the questions they should be asking themselves (related to the marketing assignment that they were conducting). This latter aspect of the quote illustrates 'redefining the curriculum'.

4.   Yeah. I mean we used them for an educational project for school and it was interesting even exchanging videos and watching the images and ... Even this, we can see that this is a part of the interaction and knowledge and sharing of knowledge I think so.

In quote 4 the learner is reflecting on the use of video cameras back in school and shows some awareness of the fact that having the facility to capture video on the phone enhances group interaction and indeed knowledge sharing. This is part of media use in every day life. However, we must strike a note of caution here in the light of debates about the complexity of overheads imposed on users of such multi-functional devices. As a counter-argument we note that dedicated devices (e.g. personal media players) have taken off, despite the fact that they provide very specific functionality only.

5.   Also, because that one [Nokia N91] has got an English dictionary and my own phone has an Italian dictionary – when I'm writing in English it makes it easier in every single letter with that phone for me.

6.   So it's just a normal thing using the phone, doing your work while using the phone, or using the phone while doing your work.

Quote 5 is interesting from a perspective of language learning. All of the students in the study were from overseas and the technology here is acting as an English language support device. Indeed, we speculate for a cohort from a diverse inter-cultural intake, this type of support can create a level playing field in terms of the common language used for communicating. Here a new habitus of learning is in development.

The phrase "doing your work while using the phone, or using the phone while doing your work" in quote 6 evidences the interplay between formal work and informal activities. The student envisages being able to carry out learning whilst using the phone, or even using the phone for personal reasons whilst learning. The two viewpoints of social device usage and using the device for learning appear to be interchangeable, and this learner seems at ease with this.

7.   It was a nice assignment actually, because now we got to see how there is the theory and immediately we had the chance to go to an event and practically apply all the theory that we saw in practice, so that was really nice. Using those mobiles was handy, just because we talked to each other and meet up by phone, got to take pictures, everything we needed. There were plenty of channels to interact with each other. In my opinion I think too many, but that's just me.

8.   Ultimately I would use my own phone if I need to, and if I had a phone like that yes! I would use it, obviously, for my assignments. ... we all had the same phones, which was good because we were all equal, but yes, I would use my own phone.

Quote 7 illustrates reflection by the learner on the whole learning process, and provides an

acknowledgement that they have been able to take marketing theory and examine it in practice: "apply all the theory that we saw in practice". Indeed, the facility to generate content and communicate was also found by the subject to be "handy". However, the learner in question does acknowledge that there may have been too many channels to interact with—we infer that this refers to the use of mediaBoard and LifeBlog. Indeed the students who used MSN chose it themselves—we think the learner was referring to the ones we imposed/suggested. This appears to refer to habitus of learning. Quote 8 was a response to the question: "Regarding these phones, say like in a year's time, when they were cheaper and lighter, how would you feel about the university asking you to do some assignment tasks on your own phone? How would you feel about that?" The learner regards the arrangement in the study as "an ideal situation", and this is more evidence of appropriation into her habitus of learning. However, quote 7 tells us something more about the learner's attitude towards the formal learning task's impact on her private time and space. This learner would use her own phone, if she had to, for learning, but she is able to visualize the future: "…and if I had a phone like that yes! I would use it, obviously, for my assignments." This indicates that learners can foresee how smartphone technology could be appropriated and put to work in the context of their own learning practice.

Example Cultural Practices: Routines in Stable Situations

As we point out above, the appropriation of mobile cultural resources in the context of institutional learning relates to the need to redefine curricula and attendant pedagogical scripts. This case provides an illustration of how one institution (London Metropolitan University) organised itself in order to make the use of new technologies and attendant practices possible in a significant way. In this section we report on the implementation and evaluation of a location-based system (Cook, 2009). The aim of this project was to:

- Provide a contextualized, social and historical account of urban education, focusing on systems and beliefs that contribute to the construction of the surrounding discourses
- Scaffold trainee teachers' understanding of what is possible with mobile learning in terms of field trips

The project has created a digital 'technoscape' (Sheller & Urry, 2006), essentially a visualization that represents urban land, archaeological space, and subjects using a combination of social and cultural scripts. The design intention was for the urban planner to move through the re-constructed landscape and thus "perform places through imaginaries" (Sheller & Urry, 2006, p. 10). Sheller and Urry link Durkheim's notion of the 'imaginaire' to urbanism: "The technoscape and the mediascape therefore work together to produce urban forms, urban imaginaries and urban subjects of particular kinds" (p. 10). The project made use of HTC smart phones, running the Mediascape authoring environment (http://www.mscapers.com/). Nokia N95s allowed students to produce video podcasts of themselves and take photos (hence linking to user-generated content and contexts). The Mscape player on the HTCs was designed to allow learners to move through the physical world and trigger digital media with GPS via an invisible interactive map.

Students working in pairs took part in trials. There were three distinct groups of BA and MA students. Quantitative feedback was obtained from students through a questionnaire, through informal group interviews afterwards, and from the tutor via an interview. This case study clearly exemplifies cultural practices. We believe it specifically evidences redefining the curriculum in terms of the provision of pedagogical scripts that enable appropriation.

Although some issues were reported about GPS signals, 91% of participants thought the

mobile device enhanced the learning experience. One student commented: "The information given was underlined by the 'experience' of the area and therefore given context in both past and present." Another student: "it was triggering my own thoughts and I was getting to think for myself about the area and the buildings." These quotes, we believe, clearly illustrate the fact that our mobile device orientated pedagogical perspective makes links to everyday practices of generating contexts, e.g. capturing a personal life-world. There is clearly a productive overlap at play here where the personal and the pedagogical life worlds meet. Indeed, there is also perturbation, in a positive sense, of the time and place element of our typology, particularly with reference to students' comments like "given context in both past and present". This was not an isolated comment about the fact that the situated nature of the mobile experienced provided significant cultural resources that prompted students to think in a deep way about their relationship to past and present.

CONCLUSION

This article proposed an "appropriation of mobile cultural resources for learning" lens through which to view and analyse learning using mobile devices governed by a triangular relationship between socio-cultural structures, cultural practices and the agency of media users/learners. We offer this typology of appropriation as a lens for understanding significant changes in socio-cultural practices attendant to learning with mobile devices. A specific rationale for socio-cultural development comes from the formation of identity and subjectivity, which can be seen to be the result of socialization, and which leads to agency. We regard agency to be the capacity to deal with, and to impact on socio-cultural structures and established cultural practices. Consequently we view our approach as dealing with the interdependent, entangled social and technological structures, the users' agency and cultural practices. Furthermore,

we took the view that ownership allows for qualitatively and emotionally very different kinds of relationships with technologies and devices. It also allows for personal media and application preferences.

We examined two examples to determine if our typology provides the explanatory power that we claim for it. Our considered view is that it does provide us with a useful analytic tool. In particular, we suggest that the use of the MA module "Events and Live Media Industries" is exactly the frame to which we have tried to refer to in our theoretical/conceptual deliberations above: the mobile phone is likely to become the main tool for access, expression and entertainment within media convergence. One question that arises is whether the appropriation of mobile devices is any different from the general and historical appropriation of media such as TV and radio. We suggest that media convergence, together with the fluid socio-cultural structures of milieus and their respective habitus, will lead to modes of appropriation as individualized generation of contexts. The spaces thus created will differentiate everyday life into individually defined contexts as well as overarch different and divergent cultural practices such as entertainment and school/university-based learning. We envisage, rather provocatively maybe, that in the foreseeable future the socio-cultural developments described above will lead to there no longer being a meaningful differentiation between media for learning inside and outside educational settings.

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Norbert Pachler is reader in education and co-director of the Centre for Excellence in Work-based Learning for Education Professionals at the Institute of Education, University of London. Among other things he has a research focus in the area of new technologies in teaching and learning. He has published widely, carries out funded research and supervises in this field. In 2007 Norbert founded the London Mobile Learning Group (http://www.londonmobilelearning.net), which brings together an international, interdisciplinary group of researchers from the fields of cultural studies, sociology, semiotics, pedagogy and educational technology and which he convenes. Books in the field of mobile learning include: Pachler, N. (2007) (ed) Mobile Learning: Towards a Research Agenda. *WLE Centre: London; Vavoula, G., Pachler, N. and Kukulska-Hulme, A. (2009) (eds)* Researching Mobile Learning: Frameworks, Tools and Research Designs. *Oxford: Peter Lang; and Pachler, N., Bachmair, B. and Cook, J. (2010)* Mobile Learning: Structures, Agency, Practices. Springer*: New York.*

John Cook is professor of technology enhanced learning at the Learning Technology Research Institute, London Metropolitan University and a member of the London Mobile Learning Group. John has published widely, having a specific interest in four related research areas: informal learning, mobile learning, appropriation and work-based learning. He has extensive project management experience, which includes AHRB, BECTA, HEFCE (CETL Manager 2005-2008) and EC work. John was chair/president of the Association for Learning Technology (2004-06) and he is currently the chair of ALT's Research Committee. John sits on various journal editorial boards and conducts Assessor and review work for the ESRC, EPSRC, EU, DfES and Science Foundation of Ireland.

Ben Bachmair was, until his retirement in 2008, professor of pedagogy, media education and instructional technology at the University of Kassel, Germany. He is a member of the London Mobile Learning Group and anssociate of the WLE Centre for Excellence at the Institute of Education, London. Her teaches as visiting professor at the State University of St. Petersburg, Russia, and is a member of the German public regulation board for television and the internet. His specialisms include: mass communication and education, media and learning, media socialization and media reception, media within the cultural development. He led the German association of media education for some years and has published widely. He is currently scientific adviser of the MyMobile project (medien+bildung, Rhineland-Palatinate, Germany).