Recontextualizing Contextless Devices:

How to Study the Smartphone

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Introduction

Media have become more mobile and thus move from situation to situation, from context to context. Whereas the scholar studying the land line phone could be fairly sure that the context in which it was used would be somewhat fixed, either the use at home or at work, or perhaps a payphone, the researcher of mobile telephones is faced with problems in this respect. For how people used a land line at home might differ from how one would use a payphone, but at least these phones were distinctly different devices. With mobile technologies the phone at home is the same device as the one used to call on the street, and the same one is used to call at work. The device takes on a different form, one could say morphs, based on the context it is in.

This context can be many different things. It can be another person, who might be more or less tech savvy, who may have different values based on age, who may have a different cultural background or be physically impaired. It can also be a different situation, such as being at home or at work, in private or in public, with friends or alone, in the pub or in the supermarket. Or it can even be a different country, where there are different cultural norms, where the law prohibits or provides different possibilities, the socio-economic context can be different or the technological infrastructure. All in all the contexts in which these increasingly mobile technologies are used are manifold, making it almost impossible to say this or that device is usually used in this or that way, without specifying the context.

But why should we care? Why does it matter that the context changes when we observe new technologies? It matters because we cannot come to a solid understanding of these technologies without taking context into consideration. Failing to do so may lead to wrongful assumptions about mobile media. Comparing for example two texts both dealing with the advent of mobile communications, we can clearly see a discrepancy when the author fails to take context into proper consideration. The American sociologist Richard Ling notes '[…] that, in most cases, the mobile phone is not a shared object, rather it is privately held (Ling, 2007).' Conversely the Brazilian Adriana de Souza e Silva states that '[…] mobile phone sharing is one characteristic of cell phone use in developing regions in the world (de Souza e Silva, 2006, 111).' And later, drawing on Weilenmann and Larsson (2002), she continues that even in already developed countries the device is shared between teens, albeit in a different way than in developing countries (de Souza e Silva, 2006, 114). What needs to be taken away from this is that Ling's assessment of the mobile phone being something private is invalid, but saying that the mobile phone is something shared would be equally invalid. The device affords both uses depending on

the context in which it is used.

A critical assessment is thus needed of how scholars should examine these, what I dub, contextless devices. Instead of the monofunctional point of view that sufficed to study more rooted media, it is necessary to view them as the ever changing things they are. To do so we can draw on the ideas of the ecological psychologist James Gibson and his theory of affordances, for they give us the tools to do just that (Gibson, 1979, 127-143). He does not pose that characteristics of objects are not inherent, but rather that they are not characteristics of an object in every situation. Coupling this with the idea that for mobile media the ever changing context is a characteristic of the device, we can attempt to come to an thorougher understanding of the technologies and their use.

This paper thus seeks to find an understanding of how we can begin to think about these contextless devices in a way that does them justice. In part 2 of this paper I will give a condensed history of two fields concerned with the study of smartphones. And moving on in part 3 I will show that because devices have become increasingly more mobile over the past decades, they have lost a specific context to be associated with. The mainframe computer for example was clearly bound to one specific context, that of the workplace, and the personal computer always resided at least on a desk (whether this be at home or at work), but mobile technologies are persistent in all different contexts. Coupling this idea of contexless devices with Gibson's notion of *affordances* and several other I will proceed to show that this has serious implications on how we can think about these devices. Because the affordance can only be perceived in context, and when the contexts are (theoretically) infinite, so are the affordances. Finally in part 4 I will argue for a recontextualizing of these contexless devices and show why and how we should study them in a meaningful way.

Going mobile
There are two fields of research that have both studied the becoming mobile of computer/communication technology. On the one hand there are the computer sciences, and more specifically the are of Human Computer Interaction (HCI), which combines psychological and computer scientific theories. On the other hand there are the social sciences, in which anthropology especially played an important role, which focused on the emergence of mobile phone technology and its uses. Drawing and combining research from both these domains this chapter will show that these technologies have indeed 'gone mobile' the past decades.

To supply evidence for this claim, it is first necessary to look at what objects they study. To understand this properly a brief overview of both used fields is in order. These overviews are by no means meant to be comprehensive give a teleological account of development, but rather the comparison of the two lays bare their differences. It will serve to show how the present day discourse in both fields came to be. For where they used to study different objects, these technologies converged and the objects of study became more and more alike. Below a short history of this development.

'Wireless' phones

The sociological studies were mainly into the area of communication technology. These (electronic) technologies started with the telegraph,which was rigidly confined to the lines that it used to send its messages, and required a user who could decipher the codes used. The possibility to sent messages was there for the ordinary citizen, but they had to bring their messages to one central point, the post office, to have it sent. It was thus much like mail earlier, but instead now the delivery speed was greatly increased.

With the invention of the telephone it became possible to engage in real time interaction with one another in a much easier way, for it did not require the knowledge of code. Once the connection was established all that one had to be able to do was speak. The telephone became much more distributed than the telegraph ever had, with private phones in people's houses, phones at work, and even payphones in the street. Thus the access to communication became much more ubiquitous, but was still confined to specific access points due to its 'wired' nature.

With the cellular phone the phone 'lost' its wire and the access to communication became mobile.[*] It should be noted that ubiquitous would be a dangerous term to use here, because although it might seem to western users that their mobile phones indeed make others always 'only a call away', it should not be forgotten that it still relies on a network of antennas. If these fail or if one finds themselves in an area without coverage, the phone simply becomes a piece of plastic again. Yet whilst not forgetting the physical aspect of the technology, it has still been made clear that the ability to communicate with others has become mobile. It is with this background in mind, and with the discourse of the 'wireless phone' that the social scientist like de Souza e Silva and Ling study the mobile technologies of today.

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[*] Radios that were in use earlier and also allowed the user to move around with it and communicate, are not discussed here. For although they have also influenced the development of technologies and practices that can be seen in mobile technologies today, they have never been as commonplace in civilian life as the other technologies discussed.

Mobile Computers

The studies of Human Computer Interacion (HCI) on the other hand, have mainly focused on computer technology in all its forms. It started with the mainframe computers of the sixties and seventies, which we hardly mobile at all and only available at high cost. It could only be used in the room where it was build and although attempts were made to create more terminals, the access to it was fixed to a few specific places.

In the eighties the personal computer was introduced, which allowed more people to access computing technology, as long as it was on a desk somewhere. This could be at home or at work, or in the public library, but it had to be plugged into the power at all times, and was thus not really moveable.

Notebook computers made computational technology more mobile, by allowing users to take their computers with them. The hardware allowed use without being connected to the power grid, due to the integration of a battery. They also allowed internet use through wireless connection and with that allowed access to the web at all places where such a connection was available. Although this made it possible for users to use the same computer in different contexts, at home or at work, but also in the park if they wished, its form still imposed limitations on its mobileness. Its design did not invite users to flip out their notebook in the middle of the street, or use it without putting it down anyway. Its bulkiness still necessitated to put it down and sit behind it for most uses, restricting the contexts in which it was used again.

Computer technology of today, though not as ubiquitous as Weiser thought it would be, is found all around us and permeates many layers of everyday life. Most notable is the adoption of computer technology into mobile phones, the so called smartphones. Being about the size of a mobile phone, these devices are in fact small computers, that offer functionality far beyond the scope of what we ever understood as a phone. They are an agenda, a map, a notepad, a dictaphone, a camera, a web browser, a gaming device, a calculator and any other thing app designers make it to be. They are in fact much more the Personal Digital Assistants than PDAs ever were, and only because of how they developed and were marketed they are still called and often seen as phones.

Integration

It can be seen that both social and computer scientist are currently occupied with the smartphone and its uses. Yet their view of it is entirely different, stemming from the 'origin' above. The one viewing it as a computer gone mobile, the other as a phone gone mobile. The smartphone remediates aspects from both these ideas and adds its own paradigms to it as time goes on. Neither of these approaches is the right one, for it is true

that a smartphone has aspects of mobile phones and it is true that it has aspects of computers, yet it is neither, it is a smartphone. For as seen above it also remediates many other concepts that existed earlier such as agendas and calculators.

Still both approaches are important for this paper, for both shed a light on different aspects. Combining these aspects will allow a better view of what makes smartphones truly unique when it comes to mobile technology.

First of, viewing smartphones as mobile phones highlights their function as communication devices, although now augmented with mail and other internet based communication tools. This marks the networkedness of the device: the possibility it grants its user to be connected to others wherever they are, the going mobile of communication. It allows us to question if and how people might communicate differently now that they can do so in a manifold of ways from a manifold of places. More importantly it shows that the device is part of something larger that may be accessed through it, such as the network of friends, but also more technological the network of information that is the world wide web.

Looking at it as little computer gives us another concept that is just as important, namely that of reprogrammability. Reprogrammability is a term that applies to software and tells us how it can be, quite simply, reprogrammed. This means that by adding or changing a certain piece of software, a device can suddenly get more characteristics (or theoretically less). A clear example of this is how the iPhone did not used to have standard dictaphone possibilities, but this option was added later with a firmware update. Of course the microphone and speakers, as well as a hard disk were already present, thus meeting the hardware requirements, but without the software to allow this functionality it was not possible. Vice versa the hardware is just as important, because it someone were to make an application that wanted to give smartphones the option to cut something, there still has to be a blade attached to it somehow. Reprogrammability is not the be all end all for smartphones, but within the confines of the hardware limitations devices can morph into a wide range of functionalities.

Context

We see thus that the smartphone is a mobile reprogrammable networked device. And because of that it has lost its connection with a specific context. This is not to say that it functions in vacuum, that would be ridiculous, but rather that it has lost its connection with a certain context in the minds of people. Context here means more than just the place where something happens, it goes further than that on two levels; socio-cultural and

functional. Socio-cultural delves into the idea of what people find appropriate use of something in a certain context. Whilst functional relates more to what people think a device should do. This will be explained using three different authors, namely the Russian film scholar Lev Manovich (1992), the Scottish computer scientist Paul Dourish (2001) and the usability engineer Donald Norman (2002).

Starting with Dourish we look into what he calls the difference between 'spaces' and 'places'. He defines this difference as follows:

> So while 'space' refers to the physical organization of the environment, 'place' refers to the way that social understandings convey an appropriate behavioral framing for this environment. (Dourish 2001 89-90)

As we can see it falls in what I have classed he socio-cultural aspect of context, namely what people expect to be appropriate in a certain place. This draws away from the idea that a space invites us to do something with it, as Gibson would have it (Gibson 1979). Instead it is the person and his or her conceptions that are most important in how they act. Lets use the chair as a simple example. The context of the chair may determine if you do or do not sit on it. When teachers enter a classroom, they will automatically take the chair in front of the class, whilst the students will take the chairs facing the blackboard. A more extreme example would be a chair in a museum. Although once clearly intended to sit on, most museum visitors will refrain from sitting down on it, because one simply does not do so in a museum.
It would of course not be impossible for a student to take the teacher's chair or to sit down on a 19th century museum piece, and in fact the chairs for students and teachers may be the same chair. Only the mindset of the person entering the room determines what is and what isn't appropriate.

A different view is posed by Norman, who is more concerned with the functional aspects of technologies. He writes about a conceptual model that people have when interacting with objects. This might seem similar to Dourish' idea, which of course also implies that users have a certain model of what and what is not appropriate, but with a important distinction; the functions of the object are the key factor. It builds on Gibson's notion of affordances, which is an important concept in our present day understanding of objects. This concept has been both influential in the world of design and that of mediastudies, even though it finds its origins in cognitive psychology.

It poses that objects invite a certain type of use, its affordance. This might seem to imply that there are inert characteristics of objects that form the affordance, but Gibson makes quite clear that this is not the case. It is the interaction of the user in a certain context with the object that forms the affordance. This can be illustrated with the simple example of the chair. A chair affords the sitting on it, because it is a horizontal surface that is knee high. As the word knee high already implies the chair only affords sitting to people of a specific height. A chair for children is not a chair for adults, because it is much too low, and of course most likely won't support their weight either. Taking this idea Dourish moved forward to his conceptual model which shows that people will use an object how they think it can be used. This might seem like a given, but it makes an important distinction, namely that it is about how it is perceived by the user, rather than how it actually works. As an example Norman illustrates how many people think that they can more quickly heat a room if they tell the central heating to make it hotter than they actually need it to be. Their conceptual model is that the radiators will become warmer and thus more quickly provide heat, and that they can turn it down when they have reached the desired temperature. What happens in fact is that the system only recognizes on and off as valid parameters, meaning that if one wants a room to be a hotter, it will simply continue heating much longer.

This example shows how people's use of a technology stems from how they think it works, which in turn stems from how they perceive it to work.

Lastly I want to shortly metion the idea of the viewing regime as defined by Lev Manovich. Manovich' idea of the viewing regime posits that the way information or functionality is presented to us, always forces us into a certain point of view from which we can access the information or functionality. This regime thus, as Manovich makes clear, changes the users perception because it imposes a specific way to handle the information. The example that Manovich, being a scholar of films, gives is that of cinema. In the cinema one has to sit down, look to the front, whilst being quiet in a dark room. This makes the way people experience a movie quite different than when they would be allow to speak, as was the case with early cinemas.

Coupling this with the idea of the conceptual model and the notion of 'places' it can be seen how other technologies impose this viewing regime by putting us in a specific role. When walking around with a photo camera for example, the user becomes a photographer, someone who observes the world from behind a lens. The functionality that the camera gives the users affords this type of use and puts the user in this role. Yet not

forgetting the socio-cultural aspect in this equation it can also be better explained what he does or does not photograph. Taking pictures through people's windows is something that in most societies is not acceptable, because it seems an invasion of the private sphere. Most users know this and will therefore refrain from doing so. But this goes further than such limitations, the 'space' may also be construed because the photographer is a tourist rather than a an inhabitant of a certain city. Being a tourist gives the user a different state of mind which may lead to different behavior in photographing.

What this means is that context is more than just the place and the objects inside it which afford this use or another. It is about the mindset of the users and their understanding of how the world works. It is as much about the viewing regime that a technology imposes as the regime that social norms impose on the user. Therefore the camera, although mobile, is not a contexless device as I understand it. Exactly for the reason given above; the camera is still connected to a specific context, namely that of making photos. Although this can be done as easily at work as it can on the top of a mountain, it is still just photographing. And when the user is somewhere that is the only affordance that the camera has, the only thing that it invites people to do with it, thus connecting it to the context of being a photographer. It lacks the diverse functions and reprogrammability that smartphones offer.

If you are on the top of a mountain with a smartphone you can choose to make a photo, or call a friend, or write an email, or listen to your favorite music, and so forth. So besides going mobile, the many functionalities that these devices offer are a second important factor in making them contextless. For if we attempt to apply the the theories hereto described we run into a problem; the same device is used in all sorts of spaces, by people with all types of different backgrounds, to do all sorts of different things. Attempting to define what something affords becomes a difficult task because as Gibson put it:

> Affordances are neither in the one world [physical] nor in the other
> [phenomenological] inasmuch as the theory of two worlds is rejected. There
> is only one environment […] (Gibson 1997 138)

There is only one environment, that in which the action takes place. But when the environment changes continually, so do the affordances. So what makes this problematic? It is problematic because when scholars study devices they often give explanations of how certain uses came to be by assigning characteristics to the technology. An example of this would be that people are less social in public transit because their mobile phones allow them to be in contact with remote people and they are thus less inclined to strike up

a conversation with their fellow travelers. This seems like a rather solid argumentation that many commuters in western countries may recognize. Looking however at Japan a different picture arises. Here the use of cellular phones on the subways is unheard of. Having private conversations in an area where everyone can hear you is culturally unacceptable and thus does not happen, as Dourish' idea makes clear.

Saying that the mobile phone affords the user to cocoon in public would therefor be wrong. Yet in some situations it does have that affordance! So how can we think about them? How can we do justice to devices that permeate so many layers in so many ways? This is what I will be addressing in the last part of this paper.

Recontextualizing

What I call for is a recontextualisation of these devices in academic research. Although the pitfall of essentialistic thinking has long ago been recognized in this field it rears its ugly head once again. And not because the adherents of the idea that smartphones may lead to cocooning are not aware that there are other studies that may say otherwise, rather this is because there is still a tendency to look for answers in the characteristics of the device instead of in the context. Hereby neglecting the importance of both these things for a proper analysis.

As media scholars it is our common goal to get as best an insight into how technologies affect our lives. Only by taking all the variables into account may we do this in a meaningful way, for after all; that which we do not account for cannot be used. An example of this could simply be a study of how people use their smartphone at home and a study of how they use it at work. If we compare both studies there are bound to be differences, even though the devices and the people are the same. Interesting results can be found this way; why do people choose to do this or that at home but not at work, or; do people perceive their smartphones differently at home and at work. Of course this is a fairly dumbed down example, it does brings across the point; if we do not take into account in what context we conduct our research, we might miss something.

This was not as dangerous with technologies that are only used in more specific contexts than it is with the smartphone. For although even with things like a desktop computer the context of use may supply important data, there are less different contexts and therefor the error margin is much slimmer. It might be true that if the desktop computer were placed on a pedestal in the middle of a busy street and everyone had free access to it, that different types of use would emerge, but the concept itself is not very feasible. The lack

of mobility confined it to much more specific contexts.

Now present day research usually makes mention of context, for it is of course a characteristic of quality research to present the research methods used, but fails to incorporate it properly in the conclusions drawn. Leading to more broadly applicable conclusions about what a smartphone is and what it does than the research actually warrants. Qualifying in what context something is the case is a necessity that can not be overlooked anymore, because otherwise conclusions are as meaningless as saying knifes are used to kill people; true, but not nearly telling half the story.
A great example of such research can be found in *Analysis of users and non-users of smartphone applications*, an article that focuses on what drives people to use certain smartphone applications (Verkasalo et al. 2010). Considering not only the technological aspects of the different applications, but also the conditions in which people use them and what the preconceived ideas of the users are. Their research is not fundamentally different than that of others, but the way in which they present it is. Realizations such as the fact that '[...] tested in this paper illustrate that one model does not fit all and that there are indeed significant differences (Ibid).' are important signs. As is the fact that they themselves note that this research is only conducted in Finland and therefor deals with the reasons why Finnish people do or do not use these applications. Thus inviting others to conduct similar research in different cultural contexts, so that results may be compared and a better understanding of what drives people to use smartphone applications can come to be.

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