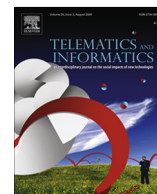


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## From ubicomp to ubiex(pectations)



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### ABSTRACT

Based on Weiser's notion of ubicomp this paper examines the idea of ubiquitous social expectations. It examines this in the context of networked mediation technologies. A central function of these technologies is to allow people to perpetually be in contact with one another. As these technologies gain a critical mass in society we increasingly expect them of one another. Thus, these mediation artifacts are not simple devices that facilitate our individual lives, they are the basis of reciprocal expectations. As this process continues, we increasingly do not have the option of opting out, rather we are, to one degree or another compelled to have them.

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### Social mediation technologies and ubiquitous expectations of use

Ubicomp has provided us with profound and useful insights into the trajectory of information technology in everyday life. Based on the work of Mark Weiser (1991, 1993, 1996), this approach to understanding the diffusion of technology has led us to see the integration of technology into a wide variety of devices. Indeed, we are often not aware of the sophistication of the devices and systems that we are using. Ubicomp along with the kindred areas of pervasive computing, ambient intelligence and “the internet of things” undeniably traces the arc of contemporary society. We have seen information technology being embedded into a wide variety of machines and devices. The ease with which digital devices can be made means that this type of technology has flourished. In this context, we have seen the rapid adoption of smart phones and tablets and the embedding of their use in our daily lives. Most recently with the development of app stores, we are also seeing the growth of new distribution channels that go outside the traditional path dominated by telecomm operators.

While the flux of technological development is important, it is only half the story. The other half is how we make sense of these developments, how we choose to integrate them into our daily lives (Silverstone et al., 1992) and how they are becoming a part of the structure of society (Ling, 2012). There are many social practices that we have had to recalibrate to accommodate the developments in the technology world. These are also different for different parts of the phone-using public. There are those who seem to take to the new digital world like fish to water. Others are less graceful in their interaction with the technology. Our accommodations have, in turn, been routinized and have also structured our social interaction.

Our use of these technologies is often seen as an individual decision. I choose to buy a PC or a game consol. I use the latest digital camera, GPS, digital watch and so on. In some cases the choice is truly my own. The consumption is largely an individual decision (perhaps pushed on by trying to keep up with the neighbors or the cajoling of ad agencies). In this paper, however, I ask about the effect of our social context in the use of a particular set of technologies, namely those technologies that mediation social interaction. I also suggest that these technologies become a part of the structure of society that coerces us to use them.

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When we think about the technologies that we use to communicate/coordinate with others then it we can see that, as Weiser suggests, they are becoming more ubiquitous. We also see that we are not necessarily independent actors with regards their consumption. Indeed there is a type of social compulsion in our use of these technologies. That is, we use them because of the needs and wishes of other people, not just our own needs. This may operate at the local level or at the broad social level. Regardless, the choice to use a particular set of technologies is not completely our own nor is it the volition of particular individuals to demand their use. Rather, these technologies are a taken for granted part of the structure of society (Ling, 2012).

Clocks and time keeping illustrate this. The clock (in its various forms) is widely available. We can have a functional device or one that is quite elaborate. We might only have a clock on our mobile phone or we may keep time by using publically available devices. Clocks help us to coordinate meetings, the comings and goings of trains, busses and planes. We use time as a way to make and keep appointments and as a way to gauge how much longer we can have a casual talk with the colleague in the neighboring cubicle before we have to leave and pick up the kids at day-care. That is, time keeping gives us (in the collective sense) a structure so as to facilitate interaction. In all of this, it is generally expected that we respect time keeping when meeting and interacting with others. We do not have the leave to ignore timekeeping. There is a web of mutual expectations associated with punctuality. There are ubiquitous expectations associated with mastering and using time keeping that coordinate our collective interactions. As Simmel notes: “If all the watches in Berlin suddenly went wrong in different ways even only as much as an hour, its entire economic and commercial life would be derailed for some time” (Simmel, 1903, p. 308). Thus, time provides a guide for arranging our collective lives. Further, its use is not optional. To be seen as a competent member of society we necessarily have to surrender ourselves to the dictates of time and time keeping. This is a part of the baggage we accept to be a part of society. Other systems of social mediation might include automobile based transportation for people living in the suburbs, ownership and use of a fax machine by hotels in the 1990s and, to an increasing degree mobile communication (Ling, 2012).

Moving to the more purely digital world, there is also the development of ubiquitous expectations associated with many information and communication technologies (ICTs). Networked personal devices allow individual addressability. They provide us the ability to communicate as needed. However, as they gain a critical mass, we are increasingly expected by others to use and/or own one. Thus, on the one hand there is a freedom, but to this there is tied a coercion. This social pressure is indeed a significant element in the development and maintenance of the new distribution systems that are arising with the use of smart phones. In this article, I will look at the history of ubicomp and its relationship to ubiex and then I will examine how ubiex develops.

## Computer diffusion and the focus of ubicomp

### *Technology in service to the individual*

In the original work on ubiquitous computing Weiser's basic notion was that with time, digital processing would diffuse into many different devices. Living on the cusp of the digital revolution and in the spirit of Moore's Law, Weiser's insight was fundamental. Rather than thinking of computers as huge mainframe devices, they were being scaled down from the macro, through the meso into the realm of the micro. Along the way, they were also diffusing into a wide variety of other devices.

In his well cited *Scientific American* article Weiser talks about how computers will “vanish into the background” (1991, p. 94). Computing devices, according to this vision, would become smaller, less expensive and more robust. The additional ability to connect the devices into networks further facilitated the drift towards embedding digital functionality into the social world. This is the vision of ubiquitous computing or ubicomp. It presented designers with the idea of a shift in the way we interact with devices. So long as the computer was a device with a command line or a GUI based form of interaction, there were limitations with regard how and where we would work with digital devices. Weiser suggests that there was an alternative way to use them. The command line or the keyboard/mouse form of using the PC provided the ability to carry out certain tasks. These approaches were, however, not always applicable to more diffused forms of computing.

According to Weiser, computation would recede into the background. Computing devices would no longer require our active attention but, like Bertie Wooster's man Jeeves, they would be quietly available in the background as needed. Weiser writes “Today's multimedia machine makes the computer screen into a demanding focus of attention rather than allowing it to fade into the background” (1991, p. 21). The reduction in size and power requirements would also lead to the development of new computing devices. These included the famous tabs, pads and boards described by Weiser (1991). This trajectory can be seen in the development of other digital devices such as the digital cameras, GPS devices, laptop PCs, game consoles, MP3 players stand alone video disk players and mobile phones. These illustrate the embedding of computing technology into ever-smaller devices.<sup>1</sup>

<sup>1</sup> Ubiomp can be thought of as sensor networks. This so called “smart dust” can be used to monitor weather conditions, track the progress of different shipments (Kahn et al., 1999). Other versions include the embedding processors into fabric, paint and other materials so as to allow for omnipresent data collection. Castells said “Computer networks will be, literally speaking, the fabric of our lives” (Castells, 1996, p. 53).

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