Mobile Technology, Co-Production, and Society: The Curious Case of Convergent Mobile Technology

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Introduction:

Recent statistics indicate that an average of 2.2 million smartphones are sold every day (Sadauskas, 2013b), and that sales of tablets have grown 142% in the last year (Sadauskas, 2013a), with no slackening of growth in sight. Such is the scope of mobile technologies today, with devices such as smartphones and tablets occupying a prominent place within the socio-technical landscape. Sociologically speaking, these kinds of devices have not been ignored by researchers, and been subject to fruitful investigation (for example see Castells et al. (2007), Goggin (2012) Agar (2013) Urry and Elliot (2010), and Katz and Aakhaus (2002)). However, as a consequence of the rapid development of technology, and the ever-changing social contexts in which these artefacts are developed (Bijker, 2009), and adopted (Haddon, 2006), these areas of research have become blurred, as mobile technologies now come to embody functionalities that were previously considered separate and discrete, converging into new kinds of devices. As technology changes, society also changes, as both are implicated in the co-production of reality (Jasanoff, 2004). This article argues that
smartphones and tablets represent a new kind of artefact within the analysis of socio-technical culture, the convergent mobile technology, a focal point for the convergence of previously discrete modes of telecommunication, digital interactivity, and multimedia capacity, combined within an intuitive computer/human interface. As a consequence of the co-productive relationship between society and technology, it is argued that these artefacts are worthy of increased sociological interest. This article describes the co-production of technology, using mobile technologies as an example, presents a justification and a prospective criteria for convergent mobile technologies, and suggests directions for future research.

Understanding Society and Technological Artefacts

Technologies are woven through the fabric of society. As Latour and Strum (1987) have argued, the only thing that separates apes from humans is our use of material resources and symbols (MacKenzie and Wajcman, 1999: 23), which have come to occupy many aspects of human social interactions. An artefact then is both the subject of, and contributor to, social interactions, with only the degree of reciprocity in question. Pinch and Bijker (1987) have argued that technologies can be understood in purely social terms, gaining their meanings from relevant social groups. An artefact's contribution to society is therefore defined by the social context it occupies, with little consideration of the materiality of the object, a somewhat socially deterministic view (Hughes, 1994). Social processes are undoubtedly important to understanding an artefact, but while many possible meanings and values may be imprinted on an artefact, they are not completely malleable to the social climate. Artefacts possess certain physical properties that contribute to their social trajectories. For example,
Latour (1991) describes how the heavy weight of a hotel room key reminds the guest of their responsibility to return it, thus demonstrating how the physicality of objects themselves can serve as a means by which social values are enforced. The key, and the weight, may be redefined in a variety of contexts, but the key and its hefty presence continue to be physically felt by their human possessors. In Latour's example, this physical weight is a harness that conveys social messages (as determined by the context) to the possessor; to return to the key, to be a good guest, and not to forget. In this way, material objects can be understood as not only being shaped by society, but as a constituent of, and contributor to, society itself. This is further developed amongst Actor-Network Theory (ANT) thinkers, who stress how social reality is composed of both human and nonhuman actors, each worthy of equal consideration in social analysis (Latour, 2005). The implications of such a suggestion have sparked considerable debate (see Bloor (1999)), but the suggestion that material objects themselves should be considered in how society is analysed is an important idea, as both the social and material come together to form society. The physical reality of an object affords certain kinds of interactions, making the completion of some actions possible, while others are made less possible or impossible, depending on how an individual understands this physicality within their social and cultural context (Michael, 2000: 61 - 7). For example, pavement affords running, walking, and break-dancing. It does not afford swimming the way a river does. Applied to understanding technology, an artefact represents a co-production between the social and the material (Jasanoff, 2004), being inextricably linked and inseparable from one another in understanding society.

The current state of research on mobile telephony can be seen as representing a co-production between the material affordances of mobile telephones, and the social patterns that are implicated by the technology. As functional objects, mobile phones are primarily concerned with 'mobile' opportunities for telecommunication, in the form of voice calls and text
messages, as afforded by the internal hardware of the device, and the user interface of screen, keypad, and microphone. They are mobile in that their materiality allows physical portability, being able to be kept close to (or as extensions of) the bodies of their users (Campbell and Park, 2008: 373) as they are in motion through time-space, but also in that they allow the movement of symbolic and immaterial forms through the device itself, such as forms of communication, but also virtual and imaginative forms (Urry, 2007: 47). Another example is in how social interactions may now be divorced from fixed locations and times, instead stretched or shortened between diverse locales, or the combinations of absence, (co)presence, availability and telepresence (Giddens, 1995), by virtue of having portable communications. Research has also indicated that the once solid boundaries of private/public and work/home, and the norms that govern them, are increasingly blurred (Wajcman et al., 2008). According to Katz and Aakhaus (2002), it is because mobile telephony allows us to be in perpetual contact that we see these change in boundaries, a change that has in turn lead to the co-production of new meanings around the artefact. Some have argued that mobile phones are eroding community and social responsibility (McPherson et al., 2009), and that they are harmful devices that isolate users (Gergen, 2002). Alternatively, users may embrace perpetual contact, with mobiles considered amongst the most intimate objects of an individual's personal sphere, holding great emotional significance (Srivastava, 2005: 113; Vincent, 2006), and contributing to users’ sense of self (Katz and Sugiyama, 2006: 324).

The above examples are not meant to convey any summation of the state of mobile telephony research, but to highlight how the material affordances of the mobile phone contribute to social situations. Specifically, that the social patterns described are produced in relation to the materiality of the object, that being the functional ability to make and receive telephone calls and text messages. As the material shapes the social, the social may act to reshape the material, as seen in the 'modding' community, a social group that valorises ad-hoc technical
modification and reprogramming (see Hartmann et al. (2008)). As emphasised earlier, social patterns are co-produced, a result of the interaction between the material artefact and society, each relates and contributes to the other, existing in equilibrium between each other. If one should change, then a change in the other is likely.

**Convergent Mobile Technologies?**

With this thought in mind, consider how the materiality of mobile phones has changed significantly in recent years, as the mobile phone has gradually transitioned from a 'dumb' communications devices, into a 'smart' device, such as a smartphone or tablet. Smart-devices have come to be convergent, representing an amalgamation of previously discrete and separate technologies and systems (Jenkins, 2006), facilitated by physical advances in technology and infrastructure (Kim et al., 2010), alongside cultural and social trends (Fagerjord and Storsul, 2007). For example, as the popularity and significance of digital media and consumptions has grown (Beer, 2008), mobile phones have become more invested in the consumption and production of these media forms. Smartphones now have the capacity to be a multimedia device, capturing, editing, and sharing media forms, as an integral part of recent media ecologies. Simultaneously there are advances in digital technologies that allow mobile devices to fulfil the promise of mobile computing, having enough processing power for computer programs, and better defined internet access than previous generations of devices (Goggin, 2009). These features were also helpfully supported by, and took advantage of, the expanding digital infrastructures in the developed west, and the support of the telecommunications industry, making internet access on mobile phones functional and popular. Another significant change with smartphones is evident in
shifts in the design of the object themselves, with high resolution screens and tactile interfaces replacing keypads and small screens. These changes to the material functions of mobile technologies may have implications for social relations, as indicated in the discussion of co-production above, and warrants the sociological exploration of these new artefacts, or convergent mobile technologies (CMTs), in of themselves.

The iPhone provides an excellent example of CMTs in the public domain, and helps to identify the specific changes in materiality that have signalled the shift towards smart-devices. Despite many of the features already being available in other devices, the iPhone has catalysed users and the market in an extraordinary way. Since its introduction it has proven enormously popular in terms of sales and market penetration (Laugesen and Yuan, 2010), and in the devotion of its users and community (Campbell and La Pastina, 2010). Its amalgamation of new and existing features, and the overall design, have formed a loose template for proceeding devices, and has led to a patent war in recent years (Edrington, 2013). The iPhone then evolved into the iPad, further leveraging the advantages of the smartphone through the larger surface area of the interface, at the expense of being able to make phone calls. The iPad is solely responsible for reviving the tablet computer industry, an industry that now threatens to swallow traditional desktop computers (Yarow, 2013). In considering the iPhone, the iPad, and its subsequent competition, there appears to be some common material aspects to these devices, and forms the basis of what defines CMTs. These features are:

- Connectivity: Access to high capacity mobile data networks, for example Next G or 4G, that facilitate access to the internet. This may also occur through local wireless connectivity standards such as WiFi and Bluetooth, often with the option of one and/or the other. The ability to make telephone calls or SMS is not necessary, given that both can now be achieved over an internet connection.
• Multimedia: The ability to capture and play media forms.

• Applications: Devices have the computational power, and software environment, to run novel pieces of software called applications (apps).

• Interface: Users interact with the device through intuitive interface designs, using touch and gesture, voice, or even eye movement.

As argued earlier, artefacts represent a co-production of both the social and material, influencing and being influenced by each other. Through the evolution of the physical design of mobile technologies, a new set of material parameters are present in the devices, which might changes the balance of co-production previously set by mobile phones. This is not to valorise material aspects solely, as the development of convergent technologies is closely linked to social patterns that run in unison to this development, again emphasising co-production. However, if one aspect of co-production has changed, the other may also have been altered, which raises the question of what possible changes to social equilibrium, if any at all, have originated with the development of these devices?

Conclusion: So what? Questions of Convergent Mobile Technologies

This paper has argued that the latest generation of mobile technologies, smartphones and tablets, exist as a distinctive artefact in society today, as defined by their new material characteristics. Simultaneously, this paper has sought to highlight how both social reality and technology are co-produced. Previous research on mobile telephony is made intelligible by virtue of understanding the affordances of mobile phones, this being voice and text calls. Bringing these ideas together means that if one element of co-production is changed, such as
the material qualities and functions of the object, then what changes are made to society? By drawing out and identifying that convergent mobile technologies are unique, and worthy of analysis, possible changes to the co-production of society can be explored. Examples of possible avenues for investigating change include (but are not limited to):

- Do CMTs change the nature of socialities for their users? Rainie and Wellman (2012) and Crawford and Goggin (2010) have both suggested new social arrangements that are defined by smart-devices.

- What are the implications of having multimedia and computational functionalities, like monitoring devices (Lupton, 2013), constantly to hand for users?

- Do the new functionalities of CMTs afford new kinds of risks for their users? This may include increased visibility to surveillance and electronic monitoring, and crimes that exploit CMTs (Timan and Oudshoorn, 2012).

It is hoped that with these kinds of questions we may begin to better understand technology, society, and its co-produced nature, and determine what, if any, changes in equilibrium have occurred.
References:


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