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Editorial

Introduction to the Social Transformations from the Mobile Internet Special Issue

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Abstract: The social transformations brought about by the mobile internet are extensive. In discussing the broad range of these transformations—positioned as a shift from personal computing to pervasive computing—this editorial elaborates on the key contributions addressed by the articles in this special issue of *Future Internet*. These articles touch on topics such as the digital divide, the role of the mobile internet in revolutions like the Arab Spring and the Occupy Wall Street movement, the development of site-specific and context-aware news, the incorporation of the internet into existing technologies like the automobile, and the utilization of the mobile internet to transform everyday spaces into game spaces.

A major shift happened in 2009 when, for the first time, people globally were using their mobile devices more for data transfer than they were for voice communication [1]. Subsequently, the devices that were once primarily used for making phone calls are now being used in ways that far exceed their original design. With the ability to access the internet on the go with our mobile devices, we have officially moved beyond a personal computing paradigm and into a pervasive computing paradigm.

This move into pervasive computing culture with the rise of the mobile internet is indeed a global phenomenon. At the end of 2011, there were 5.9 billion mobile phone subscribers, equaling roughly 87% of the world's population who had and used a mobile device [2]. The mobile internet has thus interceded into the global problem of the "digital divide" by providing access to areas that do not have the infrastructure and wealth to support hardwired connections to the internet as used in the desktop model of computing. The costs involved in providing mobile internet access is dramatically less in

developing countries that previously did not have the infrastructure established upon which the backbone of the internet would be founded (largely through pre-established fixed-line telecommunications infrastructure) [3].

In considering the range of topics that are of immediate concern when studying the rise of mobile internet culture, the issue of the digital divide is one that resides at the forefront. Any study that begins addressing this issue immediately faces an obvious fact: the ideal of mobile devices bridging the digital divide because of increased access is by no means a clear-cut issue. As people have been arguing for some time, from the likes of Andy Carvin [4] to Mark Warschauer [5], simply providing access to these technologies does not solve the issue of the digital divide. The problem instead bleeds across issues such as economics, class, the creation of relevant content, technological literacy, pedagogical training and innovations in education, and the development of meaningful communities that connect with each other in embodied ways through these technologies.

The first article for this special issue on "Social Transformations from the Mobile Internet" takes up this dilemma, looking at another important question about the role of mobile technology in the digital divide: does the low-cost nature of the mobile internet actually end up providing lower-quality access to low-income teens in the United States while simultaneously costing them more in the long run? In their article, "Mobile Phones Bridging the Digital Divide for Teens in the US?", Katie Brown, Scott Campbell, and Rich Ling provide an insightful reading of a recent Pew Internet study that they were involved in producing. A pair of statistics served as the foundation for this article: 27% of teens with mobile phones use the devices to access the internet; this statistic dramatically jumps up to 41% when looking at mobile internet use from teens coming from low-income families [6]. In seeking to address this gap, Brown, Campbell, and Ling argue that the upfront costs of purchasing either a desktop or a laptop computer to access the internet (in addition to maintaining a monthly broadband connection) is prohibitively expensive for low-income families. Thus, in deciding to opt for the "initially cheaper mobile access, the poor ultimately pay more for the internet, as mobile internet subscriptions are more expensive in the long run. Thus, the equipment divide is not narrowed. In sum, it is expensive to be poor" ([6], p. 152). Their conclusions—which are grounded in a 2009 study and point to profound repercussions for the future of the mobile internet—address the paradox that "those with the least money are paying the most for the internet." They continue: "Once we understand that it is the teens themselves paying for this service, it becomes clear that, despite being more expensive and less elegant than computer accessed internet, mobile internet is better than no internet…. This speaks to the drive to participate created by the internet; it is striking that teens with no other form of access would prioritize internet access, thereby illustrating the centrality of technical access to our society" [6].

Broadening the implications of this study to the global uses of the mobile internet, it becomes apparent that there tends to be an overemphasis on the technologies rather than on finding a bridge between mobile media and the wider cultural contexts that situate these technologies. For example, the spread of the mobile internet has been lauded as one of the key factors in facilitating the Arab Spring uprisings, the UK riots, and Occupy Wall Street movement. While the mobile internet was indeed one of the key technologies that was used to organize people in countries around the world, Nathan Jurgenson notes in his article, "When Atoms Meet Bits: Social Media, the Mobile Web and Augmented Revolution," that focusing predominantly on the technologies of these movement misses the bigger picture. He writes, "However, calling the Arab Spring a 'Twitter Revolution' or, as Jillian

York says, 'Not a Twitter, Not a WikiLeaks: Human Revolution' *both* fail to account for how technology and society, the digital and the physical, media and humans, have imploded and augmented each other. We cannot focus on one side, be it human or technology, without deeply acknowledging the other" [7]. Thus, imagining the mobile internet as a separate sphere of human activity is founded on the illusion that the sphere of the internet is distinct from physical space; similarly, a focus on the technologies as the catalyst of social transformation creates an false distinction between the online and the offline worlds. In the pervasive computing era of the mobile internet, the online and offline are so mutually constructive that theorizations need not regard these as cleanly delineated spheres. Jurgenson writes, "Our offline lives drive whom we are Facebook-friends with…and what we post about. Our offline histories, social-locatedness in various structures, demographics, epistemological standpoints, *etc*., all influence how we behave online. And what happens on Facebook influences how we experience life when we are not logged in and staring at some glowing screen. For example, social media users are being trained to experience the world always as a potential photo, tweet, check-in or status update. The logic of social media sites and smart phone technologies fundamentally influence how we experience reality even when offline" ([7], p. 85). As social media move onto the streets, accessed through the mobile internet, this pervasiveness requires us to theorize the activity carried out with these technologies—form the everyday to the revolutionary—through the lens of what Jurgenson calls "augmented reality": a reference to the technologies of AR which understands the term much broadly beyond just technological interfaces like Layar and the recent demonstrations of SixthSense and Google Glasses. Instead, for Jurgenson, "augmented reality" points toward "a larger conceptual perspective that views our reality as the byproduct of the enmeshing of the on and offline. This is opposed to the view shared by both conceptual positions outlined above that views the digital and physical as separate spheres—what I have called 'digital dualism'" [7].

This augmented reality feature of the mobile internet (broadly conceived) deeply affects the immediacy with which we access information about the people and places around us. The context-aware, site-specific information that is accessed through mobile media is accomplished in a way that unprecedented in other media. This medium-specific feature, one that is of primary concern to scholars of the mobile internet, is addressed in Kjetil Vaage Øie's article, "Sensing the News: User Experiences when Reading Locative News." The study, which focuses on user interactions with a site-specific mobile news application, *LocaNews*, during a festival in Voss, Norway, is driven by questions about how user experience changes when news stories become available and shift based on user location. Øie argues, "We construct and develop our reflective self in a different way because of contemporary media and infrastructure. We are now more likely to see our physical locality as part of something bigger than we know of: it does not have to be our place of origin where we were born and raised, but rather the physical surroundings that surround us at any time." He continues: "Even though we are always in place and place is always with us, both place and our perception of it is in a state of constant change. Technology and increased mobility are some of the elements that constitute the always changing context, since they can provide perceptual gains and losses, and bring about different ways of relating and experiencing localness." [8]. The consequences for accessing news in this way gesture toward the emerging trends in journalism as well as demonstrating the key factors of the mobile internet: context-awareness, immediacy, and site-specificity. While these concerns have been important throughout the history of journalism, as Øie notes, the utilization of the mobile internet for

accessing contextually-specific news addresses the "augmented reality" that Jurgenson argues for in his article (and what Adriana de Souza e Silva calls, as cited by Øie, "hybrid reality"). Here, the medium and the physical reality that contextualizes that medium become so intimately intertwined that they must be considered as co-constitutive of one another.

This level of pervasiveness of the mobile internet impacts already existing media like news media and, as Gerard Goggin notes in his article, extends into altering already existing technologies like the automobile. In "Driving the Internet: Mobile Internets, Cars, and the Social," Goggin argues for a plurality of "mobile Internets" that, in their pervasiveness, become "central to social belonging and cultural participation," resulting in "widening expectations of its availability at all times. This is the case with cars, where mobile Internet use is becoming more commonplace, involving email, browsing, Facebook updates, tweets, apps, Google Maps, and so on" [9]. He continues: "We can see mobile Internet's use in cars as forming part of wider systems of technology use. Late modern life is underpinned by intensifying forms of automation, sensing technologies, real-time data gathering and analysis, and surveillance, especially in cities—infrastructures deeply involved in the reconstruction of place and mobilities. These are technologies that remain much more in the background than the heavily advertised options of plugging one's smartphone into cars, yet their implications are highly significant" [9]. The significance, as Goggin notes, is highly understudied and thus requires attention that considers the specific and varied contexts through which the mobile internet is accessed. By combining the Actor-Network theory of Bruno Latour (out of which the relationship between human actants must be regarded alongside the network infrastructure of various objects and technologies) with the mobilities theories of Mimi Sheller and John Urry, Goggin traverses a range of car-internet sites of inquiry. This includes the study of mobile internet use while driving and the safety concerns therein, as well as the implications of the car itself being a networked object, which he notes, leads to the notion that "at the least, the electronic circuitry, the rise in software in cars, the emergence of the automobile as a key site, or node, in the 'Internet of things', and so, can be seen as an intensification of the mediation of automobility; if not, amounting to a strong claim, of a new kind of media—'cars as media'" ([9], p. 311). Utilizing a range of other examples of the car/mobile-internet intersection (from Bluetooth to GPS), Goggin argues that the various domains of life that are located at this intersection (e.g., "friendship groups, leisure venues, workplaces, 'non-places' of commuting such as roads and bridges") are connected in a meaningful way, "not only through the car's ability to convey the driver to these different places, but through the pervasiveness of the network technologies that bridge them, brought together by the mobile phone" ([9], p. 317).

The final article in this special issue of *Future Internet*, "The Player as Author: Exploring the Effects of Mobile Gaming and the Location-Aware Interface on Storytelling," brings together many of the topics discussed in the other articles, such as the pervasiveness of the mobile internet, its impacts on everyday life, the ways that mobile media are changing the ways that we understand site-specificity, and the transformations that mobile media bring to previously established technologies. Ben Bunting, Jacob Hughes, and Tim Hetland trace the implications of the design of a "hybrid reality game" that provides players with a narrative interface that utilizes location and site-specificity as a central component of the immersive interactions. Drawing from a discussion about the design of their game, *University of Death*, the authors explore the ways that mobile technologies are impacting the ways people imaging gaming space and narrative in an era of pervasive computing. *University of Death* is a

game that takes place across the city of Pullman, Washington, USA, and is "half scavenger hunt and half puzzle game: players travel across the city, following clues and GPS coordinates to a series of story-caches" [10]. The story-caches are essentially geocache containers that hold different elements of the narrative of the game, which involves "a film-noir-style murder mystery set in two different time periods: the story's 'present' and three years into its 'past'. The player experiences this story directly by moving through the city of Pullman and seeing the physical world through the eyes of three different virtual characters. Through the use of these different perspectives, we attempted to achieve the melding of storytelling and *ludic* play that enables worldmaking" ([10], p. 153). The mobile internet is able to enact this process of play-as-worldmaking scenario because it positions the player-as-author through an interface that significantly connects with the player's environment. Bunting, Hughes, and Hetland explore this deep connection between interface and place by exploring mobile games' implications on narrative's role in gaming, the transformation of the "magic circle" of play in a pervasive game, immersive interface design, and the role of the senses and imagination in these games' process of worldmaking.

My goal in bringing these essays together for this special issue on the "Social Transformations from the Mobile Internet" was to gesture toward some of the key concerns that will undoubtedly surface in the coming years. From the role the mobile internet will play in issues of the digital divide to the blending of place and interface in emerging social revolutions; from its impacts on existing media like news to its impacts on existing technologies like the automobile, and, finally as seen in the ways it is transforming our everyday spaces into extraordinary spaces like the city-as-gameboard, the mobile internet will continue to become an integral element to the cultural spaces, objects, and relationships that define us.

References

1. Global Mobile Data Market Update 2009, Chetan Sharma Consulting. Available online: http://chetansharma.com/globalmarketupdate2009.htm (accessed on 6 May 2012).
2. Key Global Telecom Indicators for the World Telecommunication Service Sector, Interenational Telecommunications Union. Available online: http://www.itu.int/ITU-D/ict/statistics/at_glance/KeyTelecom.html (accessed on 6 May 2012).
3. Ceruzzi, P.E. *Internet Alley: High Technology in Tysons Corner, 1945–2005*; The MIT Press: Cambridge, MA, USA, 2008; pp. 154–155.
4. Carvin, A. Mind the Gap: The Digital Divide as the Civil Rights Issue of the New Millennium. Available online: http://www.infotoday.com/mmschools/jan00/carvin.htm (accessed on 6 May 2012).
5. Warschauer, M. *Technology and Social Inclusion: Rethinking the Digital Divide*; The MIT Press: Cambridge, MA, USA, 2004.
6. Brown, K.; Campbell, S.; Ling, R. Mobile Phones Bridging the Digital Divide for Teens in the US? *Future Internet* **2011**, *3*, 144–158.
7. Jurgenson, N. When Atoms Meet Bits: Social Media, the Mobile Web and Augmented Revolution. *Future Internet* **2012**, *4*, 83–91.
8. Øie, K.E. Sensing the News: User Experiences when Reading Locative News. *Future Internet* **2012**, *4*, 161–178.

9. Goggin, G. Driving the Internet: Mobile Internets, Cars, and the Social. *Future Internet* **2012**, *4*, 306–321.

10. Bunting, B.S., Jr.; Hughes, J.; Hetland, T. The Player as Author: Exploring the Effects of Mobile Gaming and the Location-Aware Interface on Storytelling. *Future Internet* **2012**, *4*, 142–160.