

Using Mobile Augmented Reality to Re-Encounter, Re-Create, and Re-Appropriate Public Spaces

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Abstract

As augmented reality (AR) is becoming technologically possible and publicly available through mobile smartphone and tablet devices, there has been relatively little empirical research studying how people are utilizing mobile AR technologies and forming social practices around mobile AR. This study looks at how mobile AR is mediating the everyday practices of urban life, and how users are deploying it to shape their relationship and interpretations of places around them. Through qualitative interviews with users of Layar, a mobile AR browser, we found several emerging uses. First, users are navigating with these tools to experience place in ways that are distinct from other location based services. Second, we found a growing segment of users creating content for Layar that aims to communicate about and through place, historicize and challenge the meanings of place, and assert their own narratives of place through their augmentations.

Keywords

mobile augmented reality; users, digital media artists; tactics and social practices

Background

Augmented reality technologies, defined as those which can display content in real-time, 3-dimensions, and superimposed on physical space (Azuma, 1997), have been under development for decades (Feiner, 1999; Haller, Billinghamurst, & Thomas, 2007; Wagner & Schmalsteig, 2007; Zhou, Duh, & Billinghamurst, 2008). Only in recent years, however, has AR become publicly available on mobile devices (Butchart, 2011). To date, there has been little empirical research studying the social dimensions of AR. Some early work has looked at the user experience of mobile AR applications (Olsson & Salo, 2011), but less well understood is how early adopters are deploying mobile AR, in what ways they are using it to experience the spaces around them, and how those uses might change their relationship to their surroundings.

Literature Review

The relationship between place and space is complex, and we adopt Harrison & Dourish's (1996) definition that the key principle distinguishing the two is that "space is the opportunity; place is the (understood) reality" (p. 69). Advances in ubiquitous computing, mobile and wireless technologies, and the internet are enabling augmentation of spaces and changing the possibilities by which people experience and encounter lived place (Aurigi & De Cindio, 2008; Thrift & French, 2002; Urry & Sheller, 2006). Mobile AR has the potential to "more fundamentally mediate the everyday practices of urban life, subtly shaping senses of place as particular interpretations of events and locations are foregrounded or side-lined" (Graham, Zook, & Boulton, 2012, p. 1).

While augmentation of information through mobile devices is nothing new, the visual, interactive, and real-time nature of digital augmentations offer fundamentally new ways of experiencing, moving through, annotating, and enacting place (Graham, Zook, & Boulton, 2012). In addition to browsing content, mobile AR applications also allows users to create content on their platform, a practice similar to mobile geo-tagging. Humphreys & Liao (2011) have explored how users communicate

through places using mobile geo-tagging, which we push upon in this paper with specific uses of mobile AR.

Because of these possibilities of mobile AR to enact social practices in everyday life through place, we chose to use de Certeau's (1984) theory of spatial practice as the analytical lens. In particular we look at mobile AR uses as 'tactics,' or specific ways everyday people create meaning and move through everyday spaces (de Certeau, 1984). This inquiry looks first at how users are describing their adoption of AR technology in everyday life and secondly at how they are utilizing it tactically to mediate their experience of place.

Case and Methodology

Layar is a mobile augmented reality browser that first launched in June of 2009, and is the largest mobile augmented reality platform with more than 25 million downloads. We employed a naturalistic and interpretivist framework (Lofland et al., 2006), to focus on emergent practices, and focused our recruitment on AR sites and blogs where Layar users are likely to be.

We conducted 12 semi-structured in-depth interviews. Through the recruitment and snowball sample, we found six Layar users who were utilizing the technology to create digital AR art and installations. Of the twelve participants, we interviewed ten men and two women, ranging in age from early-20s to mid-50s. Interviews ranged from 30-90 minutes, with an average of 55 minutes. Interviews were audio recorded and transcribed for the purpose of accuracy. Names of informants are pseudonyms unless interviewees explicitly waived confidentiality.

Findings

Our study suggests that mobile AR does open up new tactical possibilities for reproducing and reinterpreting places in three important ways. First, users can modify what representations of the space they choose to see and what the space looks like to them (e.g. changing the front of a building). Secondly, these augmented creations only come into existence when someone chooses to look for them, which allows for a wide range of public or private communications that are simultaneously temporal, spatial, and personal. Lastly, mobile AR also allows for unlimited reproductions of that space because augmented space is non-exclusive. Unlike the assertion of power in physical space through exclusion, one person's augmentation of a physical object does not prohibit anyone else from being able to augment a space. Through the accounts of these early adopters, our study documents several important ways mobile AR can be tactically deployed to potentially affect our relationship with space.

AR as Private Spatial Communication

Certain uses of Layar were envisioned for augmented, private communication. Because these augmented creations only come into existence when someone chooses to look for them, they allow for private communications that are simultaneously temporal, spatial, and personal. Without the motivation to look at a particular place or the knowledge that something is there, the message is not delivered. Therefore, mobile AR can allow for tactical interactions between people that are spatially based and only accessible at a particular location.

Historicizing/Memorializing Public Place

One distinct practice that informants discussed in their production of AR was the creation of memorials. Such projects include the *The Border Memorial: Frontera de los Muertos*, which creates augmented calacas (traditional Oaxacan skeletons commemorating the dead) on places where remains have been found near the U.S./Mexico border (see figure 1).



Figure 1 – ‘Border Memorial: Frontera de los Muertos’, created by John Craig Freeman and Mark Skwarek

Other interviewees have also placed augmented depictions of the Goddess of Democracy and augmented tanks in Tiananmen Square. In their accounts, we begin to see explicit examples of using mobile AR as a new tactic in reclaiming both public spaces (squares, parks; museums) and contested spaces (borders, public places) within the artists’ explanations, motivations, and goals of their work. Their augmented memorials aim to speak for the oppressed and remember events that are erased by strategies and institutions that manage place. Particularly in targeting public squares and places where governments and institutions often attempt to assign their own meaning and history through rigid and disciplinary forces (e.g. International Borders, Tiananmen Square), AR content in these memorials work to recontextualize place by playing “on and with a terrain imposed on it and organized by the law of a foreign power” (de Certeau, 1984: p. 37). AR allows artists to create augmented objects in the strategic terrain but out of the panoptic eye of the dominant authorities.

Conclusion

Mobile technologies increasingly force us to confront issues of location as an influential factor for communication. Sheller (2012) uses the term “mobile medialities” to describe the various ways mobile technologies are mediating experiences, practices, and creating new and flexible mediated spatiality. This study contributes to this area of research by providing an empirical examination of mobile AR use. As mobile AR becomes accessible for more people around the world, analyzing these early adopters and uses of Layar helps deepen our understanding of how changes in media may complicate the spatial landscape and our relationship within place. While there are structural and pervasive power asymmetries in the strategic creation of physical spaces, we see examples in this study where people are utilizing mobile AR technology to tactically exert their own power on these places. The developing relationship between augmented space, physical space, and sense of place will continue to be negotiated by the people creating AR content and the people perceiving the content.

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