Locative Life: Geocaching, Mobile Gaming, and Embodiment

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ABSTRACT

This paper analyzes a worldwide GPS treasure hunt game that is played in over 200 countries with game pieces that travel the globe and are tracked online. The game players hide geocache containers in public areas, marking them with GPS coordinates. Players use their mobile devices (from GPS receivers to iPhones) to track down the container, sign the log, and leave tradable and trackable items in the cache. This mobile game offers the perfect example of the blending of material and virtual interfaces, notions of presence and absence, visible and invisible, and utilitarian and playful purposes of everyday objects. Embodied subjectivity in Geocaching is gaining through a correspondence between the user's location gained through GPS coordinates, the finding of a material object hidden in everyday space, and the signing of the logbook in the container. The act of physically signing the logbook as a way to prove embodied "presence" in material space is highly dependent on the screen space of the GPS receiver. Thus, I argue for a cohesive sense of embodiment gained through a "proprioceptive-semiotic" convening of bodies, technologies, and socially constructed spaces.

Keywords

Locative Gaming, Geocaching, Mobile Technologies, GPS, Embodiment

1. INTRODUCTION

On May 1, 2000, the United States government removed the restriction to civilian access to the signals from its Global Positioning System (GPS). Removing this "Selective Access" ushered in an era of locative technology for everyday use. Such technologies have brought to fruition the much-speculated age of ubiquitous computing by moving the user interface away from the personal computer to the space of pervasive computing. Immediately after the Selective Access was removed, people began testing the accuracy of their GPS receivers (GPSr), including Dave Ulmer who placed a container in the Portland, Oregon area and logged its coordinates onto a Usenet site. The container was found by users of the site, who logged their visits both in the container's logbook and online. Thus began the GPS treasure hunt game called "geocaching." This locative game, a category with a variety of labels such as "urban game," "pervasive game," "ubiquitous game," "hybrid game," or "flash mob game," serves as a strong example of the way that such games are changing user's relationships to embodied space [3]. From the correspondence between the GPSr and the material landscape to the confirmation of "presence" at the site of the cache gained through a physical signature in the logbook coupled with an online retelling of the find, geocaching utilizes pervasive computing for play in a unique way compared to a variety of locative games. Geocaching blends two distinct genres of locative gaming: augmented landscape gaming (in which data overlays the city) and trace-based gaming (in which the trails or tracks created by the user's movement are utilized as part of the objectives of the game). Movement across the augmented landscape — and the proprioception of the self in relationship to that augmented landscape and technology that creates the mixed reality space — is how gamers are able to successfully locate geocaches and log their visits. This proprioception also convenes with an embodied semiotics users must engage to hide in plain sight through performing a sense of alternate purposes. Users embody false purposes in order to keep their agenda hidden from passersby, thus keeping the cache container hidden from non-gamers (typically called "Muggles"). This mode of embodiment is what I term "proprioceptive-semiotics." Geocaching serves as a key example of proprioceptive-semiotics in locative gaming since users who enter the augmented landscape of GPS data also enter a realm that requires a different mode of embodiment, one that depends on a proprioceptive-semiotic convening of bodies, technology, and material space. In this mixed reality space/augmented reality, embodiment is reliant on the correspondence of all these elements and is utterly dependent on the acknowledgement of presence by technology and the social structures that establish and maintain the space.

Geocaching has grown in popularity as a locative game since its inception in 2000. There are over 2.7 million registered players, growing at a rate of 2,500 a day in 2009. There are currently 850,000 geocaches hidden around the world (including Antarctica) and some regions are so densely populated with caches, that players can find one every .1 mile (the minimum distance caches can be placed apart from one another). Players can either upload a cache's information (including GPS coordinates, hints, and container type) to their GPSr or simply load the details of nearby caches on their mobile phone through the Geocaching application. Once within reach of the cache, it is often up to the player to discern where the cache might be hidden since the player's location might be inaccurate due to poor satellite connection or by a difference in the GPSrs of the hider and the seekers. As mentioned, the player often must pretend to be occupied with some other purpose as to not draw suspicion to

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their activities or give the location of the container away to non-players. In February 2008, a geocacher was witnessed on a CCTV camera placing a cache near the Aoeta Center in downtown Auckland. The bomb squad was called in and sections of the city were closed down as they investigated the suspicious container.

Once players find the cache, they sign their player name into the logbook along with the date of the find. This physical signature is a requirement of the game. In order for the find to count toward the player's overall finds, they must prove their presence at the cache with a physical signature. The player can also leave items such as Travel Bugs that move from cache to cache and accumulate distance along with accounts of the item's travels by the gamers who pass the Travel Bug along. There are also usually trinkets left by gamers who can trade one item for another. The last step of the player's experience with a cache is to log the visit online at Geocaching.com. Here, players describe the events of the hunt (often discussing the roles they had to play to not be spotted by non-gamers), the condition of the cache, and the objects left or traded. This multi-step process makes geocaching a game that utilizes the correlation between the material landscape and digital space and depends on the collaboration between these spaces for a sense of embodiment.

Figure 1: Geocache Container

2. THE PRODUCTION OF LOCATIVE GAMING SPACE

Site specificity is a key aspect of locative gaming's appeal, since it typically takes advantage of the user's real time correspondence to a the development of space-time-movement. Mary Flanagan goes as far to argue that, "With only a few exceptions, one can conclude that the phenomenon of play is *local*: that is, while the phenomenon of play is universal, the experience of play is intrinsically tied to location and culture" [3]. Due to locative gaming's reliance on precise coordinates, the use of space is often misunderstood as simply a site enacted upon by an agent. As Henri Lefebvre noted, space is often misconceived as a container that is entered and manipulated rather than that which is co-produced alongside embodiment [7]. Space seems to be preexisting and thus is able to be transformed by the gamer who hides the container. This carries over into many discussions of the relationship between the screen space of the mobile device and the player's experience of the material space they navigate. Christian Licoppe and Yoriko Inada make such a claim when they write, "Tele-presence, augmented reality or virtual reality extend this problem to the juxtaposition of the lived experience of the body 'here and now' with a disembodied experience 'over there'. Living harmoniously in an augmented world means being able to smoothly integrate the embodied lived experience of the body and the mediated perception of oneself and of the environment" [9].

While locative gamers do point toward the constant interplay between these spaces, such statements assume the presence of a preexisting space that is then inhabited or experienced in a disembodied way (e.g. across a network or on the interface of the mobile device). Conversely, this paper points toward the production of locative gaming space in conjunction with bodies that create the space for playful purposes. These spaces, whether digital, material, or a mixed reality space, never function as a disembodied zone. Instead, space itself requires a convening with bodies (and here, with technologies) for its production.

In mixed reality space — which is understood as a space where the "merging of real and virtual worlds… produce a new environment where physical and digital objects can co-exist and interact" [13] — studies of the embodied status of the gamers often become dichotomized between those who focus on the ways the body is transformed by the technology (many harkening back to Kittler's notion that "media determine our situation" [7]) or the ways that technology is perpetually imbued with meaning through modes of embodiment (such as Mark Hansen's argument that only embodied "meaning can enframe information" [5]). N. Katherine Hayles addresses this dichotomy when she writes, "Embodiment will not become obsolete because it is essential to human being, but it can and does transform in relation to environmental selective pressures, particularly through interactions with technology" [6]. Extending Hayles' argument, I seek a balance between looking at the ways locative technologies such as GPSrs and iPhones have created a new space for play and the arts and also seek to develop the integral role that embodiment plays in the success of these games. The space is neither fully delineated by the technology of the game nor is it limited to the perceptions of the players. Instead, through the development of proprioceptive-semiotics, player's embodiment is developed simultaneously between the zones of perception and invisibility, between resistance and hegemony, between technology and the body.

The space of geocaching is a combination of user movement that corresponds to mapping space on the GPSr interface and the digital information that augments this space. This augmented space is understood by Lev Manovich as "laying new information over a physical space" in which "power lies in the interactions between the two spaces" [11]. Movement through the space and the embodied production of the space is determined by the playful purposes of the game. As Hansen argues, discussing the relationship between movement and the creation of space: "How and why, exactly, can GPS technology re-organize space into another space, into spacing itself? It can do this because it facilitates a virtualization of planes of information, which is equally to say, a passage between time and space, a mutual contamination of time by spacing and of space by duration or delay. […]Put another way, the GPS network restores the originary condition of space, its originary composite with duration, the name of which is movement" [4].

The movement is able to create and define the space. Thus, as a geocacher moves through a space to retrieve a cache, their movement and purpose transforms the space as the space of play.

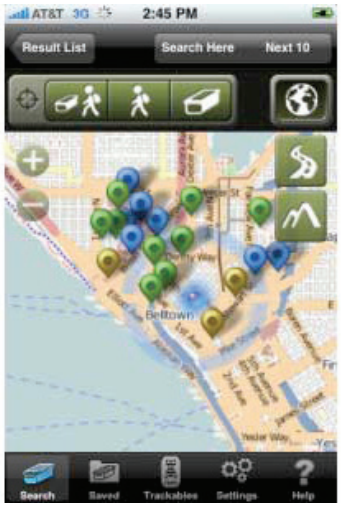

Figure 2: iPhone Interface for Geocaching Showing Containers in the Immediate Vicinity

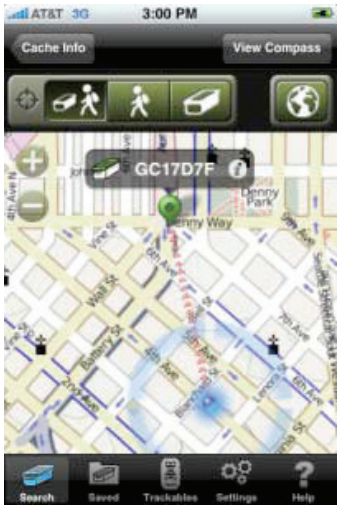

Figure 3: iPhone Interface Showing Distance From Gamer to the Cache Container

The first geocache I discovered was hidden inside the Portland Public Library in Portland, Oregon. As I wandered among the shelves of the library, my movement and purposes were not aligned with the structure and design of the building. My movements through the building instead transformed the structure into a game space. Theorists, such as Caroline Bassett, often point to Michel de Certeau's spatial tactics to understand this transformation of everyday space. Bassett writes, "In the 1970s, in The Practice of Everyday Life, Michel De Certeau contrasted the embedded perspective produced by walking in the city at ground level with the strategic viewpoint from on high, a view usually enabled by technology. For De Certeau walking was a spatializing, narrativizing practice. Those who felt their way through the streets, tracing out their own trajectories, produced a second, ghostly mapping of the city; one that confounded the official city of the planners and architects – at least for a time" [1]. Such a "ghostly mapping of the city" connects to Guy Debord's notion of *dérive* and the transformation of the city by the wanderer who isn't led by any purpose other than spatial flows. As Marc Tuters and Kazys Varnelis write in their article, "Beyond Locative Media," "In adopting the mapping-while-wandering tactics of the dérive, tracing-based locative media suggest that we can re-embody ourselves in the world, thereby escaping the prevailing sense that our experience of place is disappearing in late capitalist society" [14]. The production of locative gaming space relies on this transformation as a key component for the constitution of embodied space. Thus, for theorists such as Flanagan, the study of locative media must simultaneously engage the cultural histories of sites, their "social relationships, associated languages, customs, flora, and fauna," we must also be aware of how such sites can be reorganized and resignified by the process of movement, especially the movement associated with play [3].

3. EMBODIMENT IN LOCATIVE GAMING

Locative media have made the process of navigating material space that is informed by digital space a seamless, day-to-day activity for many mobile technology users. While Manovich argues that the power of augmented space is found in the interaction between material space and the digital information that overlays it, the process of inhabiting multiple spaces simultaneously has moved into the sphere of the quotidian and often goes unnoticed. In cities throughout the world where inhabitants are active mobile phone users, navigating the landscape is a simultaneous process of sensorial movement through streets and buildings and an embodied connection to how those places are augmented by digital information on mobile devices. Thus, what constitutes the "interface of everyday life" is the process of navigating the correspondence or disjunction between the physical landscape and the digital landscape. GPS devices in automobiles were some of the first examples of this new form of navigation that depended on the correspondence of material interface (the windshield) and digital interface (the GPS device). The relationship between these interfaces has become so seamless that it has completely altered the way we embody the landscapes we inhabit.

Figure 4: Standard GPS Device used for Geocaching

Since space and embodiment are so intimately tied, it is important to interrogate the ways that locative games develop a sense of player embodiment. From the outset, it is key for players to gain proprioception through the GPSr. Knowing where you are in space and how far away from the cache you are serve as the first correspondence between body and mixed reality space. In order to get a clear sense of location, however, the player needs to be in full view of GPS satellites. As the GPSr boots up, it is searching for signals from satellites, attempting to acquire an exact location through the correspondence of four of the 24 GPS satellites. Until this signal is strong, the player remains in a state of detachment from embodiment in the gaming space: the location on the interface does not match the material landscape and thus the relationship between the player's body, the cache, and the digital data augmenting the landscape remains fragmented. In this "patchwork of dis-connected states," as Bassett puts it, our sense of presence fluctuates between the gaps of connection and disconnection and also takes into account our attentiveness to the ways we inhabit mixed reality space. Bassett argues, "As we increasingly switch our attention from one place to another, each time at the expense of the last (perhaps because we increasingly seek the sensation of connection over any sustained engagement with the discrete content it affords), our lives become fragmented. To an extent we become a 'patchwork of dis-connected states'. On the other hand, since attention never presumes absolute presence it cannot presume absolute disconnection. When I switch my attention into my phone, I leave some part of myself behind and as a consequence I have some part of myself to return to: to reconcile with. Perhaps indeed, I need to think harder not only about what and who I am between and across these states, between and across these spaces, but also about how I operate to make these moves in the first place" [1].

Since the player is seeking to engage the gaming space as an embodied interactor, he or she is dependent on the cohesive link between the various sites that produce locative gaming space. Until these sites cohere, the player remains unable to embody the gaming space of geocaching. The two halves that create augmented space — data and materiality — must correspond in order to produce this space and the bodies that inhabit it. Thus, a key to embodiment in this mixed reality space is being witnessed and acknowledged by the GPS satellites. This machinic gaze establishes locative presence in the gaming space and is confirmed by the interface of the mobile device. Gamers are keenly aware of the embodied gaze by the satellites due to the limitations of the technology: the GPS signal fades or does not function when there are objects (including cloud cover) blocking the view between GPSr and the satellites. This constant awareness of the proprioceptive space between the gamer's mobile device and the gaze of the satellites does much more than simply transform the GPSr into a type of prosthetic; instead, a sense of embodiment in locative gaming space is indelibly tied to the technology. As bodies and technologies work in concert, augmented space can be navigated as part of the locative gaming landscape.

This sense of technological proprioception works in conjunction with the embodied sign systems that players perform. By attempting to make their purposes inconspicuous, players are not only aware of the gaze of the GPS satellite, but also aware of the gaze from the surveillance technologies and the people that are in proximity. While this engages the "being-for-others" phenomenology that Maurice Merleau-Ponty theorized [12] it also engages the semiotics of embodied identity performance in public space. As noted in the example of the Auckland bomb scare, people who are perceived to be lurking and displaying suspicious behavior are often categorized as a threat to public safety. Gamers thus need to embody the sign systems of "purposeful movement" through public space in order to conceal their engagement with the space as gamers. This simultaneous phenomenology and embodied sign systems — proprioceptive-semiotics — develops a sense of embodiment that emerges from sensorial experience but also from socio-cultural texts that saturate the locale.

The body that hinges on these two categories of spatial awareness and the embodiment of socio-cultural texts is what I term the "proprioceptive-semiotic" body. This body is simultaneously created with the space it inhabits and is a body on which inscriptions can be written and read. This is the body of phenomenology converging with the inscripted body-as-text in a world of stimuli and signs. It is a body that coproduces spatial meaning with cultural objects such as GPS and surveillance technologies while simultaneously reading and being read as a *particular* body. It is a body that is space but also a body that inscribes the spaces it inhabits. In locative gaming, in which the player must inhabit the hybrid landscape of augmented space, the proprioceptive-semiotic body affords players the ability to move beyond the determinism of a certain technology to engage the ways that meaning in the space is created by the sensorial stimuli with the socio-cultural texts. Technologies and bodies continually inform each other in the ways that they produce space and the significance of that space.

4. SOCIAL PRESENCE AND ASYNCHRONOUS ENGAGEMENT

One element of geocaching that makes it unique for locative games is the ways that gamers confirm their presence at the specific location of the cache. Within each cache is a logbook that users have to sign when they make the find. An online chronicle of the find subsequently matches this physical imprint. By signing the logbook, gamers are inscribing their presence into the augmented space of locative gaming.

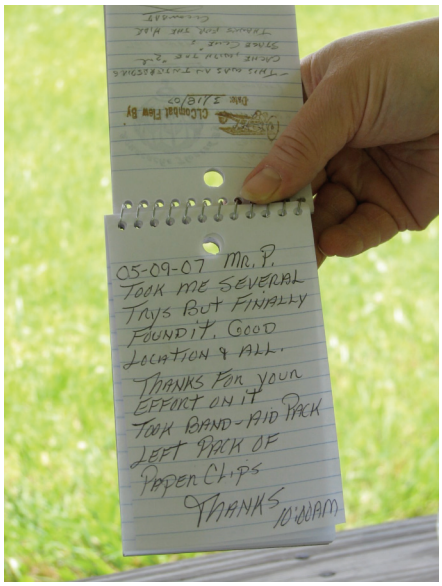

Figure 5: Logbook for a Geocache Find

This type of confirmation is distinctly different from other locative games such as *Mogi* or *Can You See Me Now?* in the relationship between embodied presence and social time. While many locative games engage players in simultaneous space-time-movement, in which they can see the other players that are currently playing, where each player is at, and the distance between players, geocaching displaces the component of time by making much of the game about asynchronous documentation of presence. Players cannot chat with each other in real time, they are unaware of each other's locations in real time, and they rarely encounter each other during the process of play. Geocaching thus stands in contrast to the liveness of many locative games. As Bassett notes, "Connecting to a mobile space is often experienced as going 'live', allowing movements at (communicational) speeds that neither walking, riding or even flying can accommodate, even though they have come to seem natural. The users of these spaces are highly mobilized subjects, people able to keep up with contemporary life. Perhaps this explains why I pay more attention to the live transactions mediated through my mobile than to the 'live' live events of the street" [1]. Bassett's linking of synchronicity to presence (whether it be presence in the space of the mobile interface or presence in the material street) closely links with Rich Ling's distinction between the categories of "co-presence" and "mediated" interactions over mobile devices [10]. For Ling, the co-present interactions between people who are in physical proximity confronts the mediated communication that often interrupts and challenges the "primacy" of the face-to-face interaction. For Ling and Bassett alike, all meaningful interaction that takes place as "primary" happens in real time. Communication in asynchronous form does not seem to affect the status of full presence gained through dialog.

Though the synchronicity of some locative games might seem to make the confirmation of embodied presence more reliable (since other gamers can pinpoint the exact location of a gamer and engage in dialog with that player, as discussed in detail by Licoppe and Inada's discussion of *Mogi* [9]), the process of signing the self into being in asynchronous time points toward the false assumptions made by real-time locative gaming. Real-time gaming's ability to create dialog between players is often a part of the creation of the affinity space of gaming (whether it be the augmented reality of the urban environment or the gaming space in massively multiplayer online role playing games), but attributing full presence to dialog has been long exposed by the post-structuralist project. The distinction between presence being formed through voice/dialog and absence being signaled by documents/art harkens back to Plato's *Phaedrus*; however, such investment in the idea of embodied presence across media forms has taken on new capital in the age of pervasive computing. Documents, such as voicemail and text messaging, signal the sense of detachment and distance that is not afforded to real-time communication. Thus, since geocaching has very little correspondence with real-time social gaming, it might seem to be less conducive to the creation of an affinity space marked by the confirmation of embodied presence. Interestingly, Jacques Derrida used the signature as an example of full presence (as signaled by absence) through documentation [2]. The inscription of a signature holds much cultural weight in many regions of the world and serves as proof of presence; for Derrida, the signature points to the ways that culture itself is textual, perpetually being inscribed without ever being grounded. For post-structuralists, the false opposition between presence/synchronicity and absence/asynchronicity is exposed by the signifiers such as the signature that mark embodied presence. In mobile phone culture, the creation of textual documents does not necessarily signal distance and absence; instead, these new forms of documentation have become a form of embodying the self in mixed-reality space.

For geocaching, much of the game is centered on the process of creating documents including signing the log and chronicling the find online. These documents become integral to the game and how users achieve a sense of social embodiment in relationship to other geocachers. The correlation between these textual signifiers and the embodied sense of navigating locative space demonstrates the culmination of proprioceptive-semiotics in this game. As all of these elements come together, the gamer is able to embody locative gaming space — a space that traces movement across pervasive computing locales, is augmented by data, and is documented by the signing of a physical logbook and an online retelling of the cache's find. While locative gaming and arts continue to investigate the ways that geolocation alters the sense of spatial and social engagement, we must not overlook the fundamental component of time and cultural capital given to synchronicity.

As the production of locative gaming space is entirely dependent on the status of embodiment, the production and movement through time is no different. Synchronicity and asynchronicity as notions of time can be understood in a variety of ways from the phenomenological sense of time-consciousness to the technological creation of atomic time that is associated with GPS. The time associated with the proprioceptive-semiotic body once again hinges on the relationship between the two. Neither phenomenological time nor atomic time takes precedence. The two are deeply intertwined and inform each other. The process of movement through locative space (as it is associated with time) is both a sensorial understanding of time — in geocaching, asynchronous time of creating embodied documents — and a location-based time that is produced through the GPS satellite's ability to locate the gamer in atomic time.

Ultimately, the significance of locative media to gaming and the arts is the way that embodied engagement with mobile devices allows users to function as a hinge between material and digital spaces, presence and absence, and synchronous and asynchronous time. By performing across these oppositions, gamers will be able to expose the ways that these categories never occupy the status of grounded signifiers. Geocaching thus serves as a key demonstration of how locative gaming can fluctuate between these categories, combining them at times, dismantling them at others, in order to create a distinct sense of embodiment in pervasive computing space.

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