Urban Games: Inhabiting Real and Virtual Cities

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Abstract. Virtual environments, originally seen as less-than-perfect replicas of physical world, acquire their own identity with unique visual and spatial logic. Identity that now starts permeating back into everyday life and informing what is expected or acceptable within physical reality. The distinction between the actual and virtual fades when seen through the screen of a smartphone, experienced through a navigational system of the video game console, or manifested by media rich culture often confusing a product with an image. The paper considers massive multiplayer online role playing games (MMORPG) as the analogy to an urban ritual/happening and places AR in the broader context of the mobility-on-demand culture, location-based and ubiquitous technologies, and the authoring of the public realm. It also explores how we can take an advantage of the urban mobility for crowd sourcing, social networking, and multi-player gaming as well as non-normative use of public spaces.


INTRODUCTION

Urban landscapes, and public spaces in particular, are increasingly defined by contemporary digital culture. A multitude of electronic devices augment our daily lives and the ways we function within them. Video cameras oversee public safety, sensors track daily commutes, and wireless communication interconnects individual nodes into broader networks. At the same time, individual users and their mobile devices extend these data networks through location-based and personal content to form user-centered data landscapes. Peer-to-peer user-powered networks allow for direct, yet often anonymous communication that leads to new forms of social participation. They provide unique opportunities for creativity and respond to our new expectations of globally connected, locally situated lives.

The growing digitization of urban environments reflects a broader cultural shift associated with ubiquitous electronic networks and the place of media in our society. It also redefines the role an individual plays within society and, associated with it, new forms of identity, ownership, and authorship. It promotes peer-to-peer communication with social self-organization and forming (sub)cultural identities. Information and ideas are no longer distributed hierarchically, but rather are shared laterally among network nodes/users. Through this act of sharing, a new knowledge is formed, often without a single author or owner. An open-source intellectual property marks the return to communal thinking, working, and authoring. This new paradigm of ownership and authorship of public domain creates opportuni-
ties for the democratization of the public realm as a balancing force to governmental and corporate interests.

This paper focuses on new opportunities arising from current electronic culture. It considers contemporary urban landscapes as a synergy of physical form with cultural heritage and with the social dimension of digital technologies. In this new scenario, cities become multidimensional mediascapes with visually rich and emotionally engaging narratives. They become platforms for open and anonymous collaboration achieved through media overlays and game-like environments.

This new urban dimension is enabled by ubiquitous mobile devices. Always on, location-aware smartphones serve as portals to enter and navigate these multimodal landscapes. Geographic data, personal preferences, and audiovisual narratives merge into a single data-based landscape that extends the conventional definition of public spaces. Unlike users of past media, participants in these e-landscapes are both consumers of the media culture-location continuum and its creators. Due to their bidirectional operability, mobile devices serve both as receivers and as originators of data. Through the data collected by individual mobile phones, we are able to understand the dynamics of social groups and their interests.

The trajectory of the progression from urban to digital and mobile location-based networks suggests a further evolution of the concept of communal space that may offer functionalities similar to those of “Web squared” (Web 2.0). The combination of digital and mobile networking could result in analogous “city squared” (City 2.0) architecture where buildings and spaces actively interact with users as well as monitor their own performance.

**MAPPING WEB2.0 TO CITY2.0**

The current progression from Web 1.0 to Web 2.0 (Web squared) is indicative of broader changes in the way we act and set expectations toward the surrounding world. Concepts behind Web 2.0 are being adapted to other disciplines, such as finance, management, and education. In a 2.0 paradigm, businesses benefit from users’ feedback, increased knowledge sharing, [1] and more effective marketing reaching a broader customer base. Similarly, in education, the Web 2.0 paradigm shifts the focus from presentation to participation, from access to information to access to people—teachers and classmates—effectively reframing the role of the faculty in academic teaching from knowledge source/expert to facilitator of learning. [2] In all these examples, the focus of businesses and academia changes from knowledge-source centered to user centered. However, in this new framework, consumers (students and users) are moving away from pure consumption and becoming content producers as well.

Similarly, the Web 2.0 framework ports into urban environments and public spaces. The correspondence between Web 2.0 and urban spaces is clearly denominated by a common framework—social networks. Urban spaces are no longer exclusively defined as a distinct collection of physical buildings but as a dynamic network of inhabitants who actively contribute to the space’s image. The traditional concept of a city and its mental image as defined by Kevin Lynch (1960) is no longer sufficient. The formative elements such as landmarks or nodes may still apply in a media-enhanced city, but they become more virtual and ephemeral than in a traditional interpretation. Furthermore, these elements may no longer be universally recognizable or shared by the community nor contribute to universally shared collective memories of a place. The repositioning of urban networks with a focus toward users unavoidably shifts the metal maps of the public realm from objective “values” to subjective “feelings.” The status of a node or a landmark becomes context and user dependent.

City 2.0 returns to the phenomenological dimension advocated by Christian Norberg-Shulz. Discussed by Norberg-Shulz, the idea of genius loci (spirit of place), a combination of place and the phenomena associated with it, resurfaces in today’s media-enhanced cities as a relevant and potent concept. Location-aware functionalities present in ubiq-
uitous mobile culture map directly onto the idea of genus loci as it relates to tangible and intangible human experiences. Media facades and mobile augmented reality extend the realm of the nonphysical setting of a place and the ways the “atmosphere” of the place affects the participant experience. The key attributes of Web 2.0, such as interactivity, crowdsourcing, context-specific behavior, collective knowledge, and collective authoring, directly link to similar categories within architecture and the public realm. In architecture, city, or the public realm, terms such as “participation,” “private and public,” or “collective memories” are familiar code words for user-centered design.

Figure 1 shows a number of corresponding parities between Web 2.0 and Architecture 2.0: “interactivity” and “participation,” “context specificity” and “private,” “ubiquity” and “public,” or “collective wisdom/crowdsourcing” and “collective memory” as defined by Aldo Rossi (1982). “Interface” is another shared concept. Architecture and design can be seen a form of user interface (UI) focused on optimizing user experience (UX). The concept of a city as UI and UX to some extent is already present in A Pattern Language: Towns, Buildings, Construction, by Christopher Alexander. In this book, Alexander defines rules of spatial design based on observations how people interact within and experience urban spaces. He argues that these behavioral patterns should inform the built environment. Interestingly, his patterns could inform not only the physical but also the virtual world. The creator of SimCity, The Sims, and Spore games, Will Wright, acknowledges the influence Alexander’s work had on his games:

“[a] more appropriate source of inspiration we have found is things like architecture, and product design,
because those are inherently more interactive design fields. SimCity was actually originally inspired by Chris Alexander, and going back and looking at design in general I’ve found a lot of inspiration from Charles and Ray Eames, Jay Forrester, Jane Jacobs, all the people who are sort of spanning the division between design, theorist, and a specific field – you know, urban design, architecture or whatever. I find that triangle really interesting to draw inspiration from.” [3] Wright is one of many who see architecture and the city as a creative framework for media-based environments.

The mappings between Web 2.0 and City 2.0 are possible because both environments, Web (network) and city (public realm), are spatial and social constructs. They go beyond linearity of experiences with a multiplicity of depths and bifurcating possibilities. Their strength comes from the ability to interconnect individual nodes and create a system that supersedes its individual components. In many ways the Web and the city are two versions of the same interdependent social and cultural pattern.

PUBLIC REALM AS SOCIAL MEDIA
If we acknowledge architecture and design to be a form of the UI defined by UX, then a question emerges as to what extent we can consider architecture and the city as cultural and social media. It is difficult to deny this perspective on architecture, looking at the role architecture historically played with its gothic cathedrals or baroque churches. In the context of contemporary electronic media, however, this synergy between physical and virtual may be harder to get consensus on. While architecture is intimately intertwined with a social or philosophical message (causes), this is often underplayed in its relationships to contemporary media and entertainment. To some, media may seem less permanent and intellectually charged, and perhaps a less serious enterprise as compared to design or architecture. However, the media component not only extends the definition of architecture and the public realm, but also redefines its relationship to the public.

Electronic media provide a new definition of landscape and opportunities for its use. In media-enhanced spaces, the traditional concept of landscape serves as the interface for human interactions, information navigation, and entertainment. Media landscapes become interactive and reactive environments reflective of the human relationship with surroundings. They are not merely spaces that we inhabit, but also co-participants impacting and reformatting the roles we play within them. These new spatial and landscape attributes openly redefine the role architecture could play in the future, particularly its primary reading as a constant and permanent inscription into the landscape.

Web 2.0, as one of the indicators of current media culture, not only redefines the way we interact online, but also sets new expectations toward daily activities and physical environments. Accustomed to dynamic and interactive media interfaces, users expect similar flexibility, adaptability, and intelligence from everyday physical spaces and objects as from digital constructs. Digital counterparts to the traditional, physical public realm may replace its particular elements or bring back elements that are already nonexistent, but most likely they will become an added layer of information inscribed onto the preexistent space.

Cities are no longer the places they once were, or perhaps they are more so—forming novel and sophisticated social possibilities realized through electronic networks that interconnect with the social, artistic, economic, and political lives of citizens. Cities are no longer purely physical artifacts—they are media, rooted in a graphical user interface (GUI), fine-tuned for the optimal user experience (UX), and accessed through ubiquitous networks and mobile apps. From cinematography we have adopted discontinuity of time and space, with its in-synchronicity of interactions and unexpected causality. At the same time, we expect to be continuously plugged into a larger, ubiquitous technological continuum of social networks and data flows. Co-location and direct interactions register differently today in the context of electronic networks. However, this unconventional deployment of digital media and non-normative urbanism may better align cities to their
original purpose as social space that responds and promotes cultural and social growth, including commerce. Urban environments become prime testing grounds for the physical-to-digital-and-back-to-physical metamorphosis cycle with an idea of digital physicality and physical digitality forms a core theme of augmented urban lives today.

PHYSICAL/DIGITAL INTERDEPENDENCIES
While our physical world is being transformed by the digital mindset, there is still a continued reciprocal relationship. Much of the electronic culture positions itself in reference to the physical world. It may not be a coincidence that many successful games such as Assassins’ Creed (fig. 2) or The World of Tanks (WoT) (fig. 3) are deeply rooted in conventional (urban) landscapes. There is a persistency of forms and naturalness to the physical world we know that allows for ease of navigation and communication of ideas.

Our lives continuously shift between the simultaneities of urban realities and cyberspace. We, as users, constantly alternate between “the real, the imaginary, and the symbolic” without parsing them into a simple duality of the physical and the digital. These two sets of categories, Lacanian and technophysical, cannot be simply mapped by associating the real with the physical, or imaginary with the digital. The nuances break apart any stylistically elegant categorizations. Both and each, the physical and the digital, can encapsulate Lacanian elementary registers in holistic, yet complementary ways.

The relationship between physical and virtual is not just conceptual. It originates from the sum of subjective perceptions of urban inhabitants who merge their virtual and real lives into a single experiential continuum. We are engaged emotionally and
socially in a vague combination of physical and virtual experiences. Within cities, virtual and physical experiences seem to have irreconcilable yet mutually enriching relationship. Paradoxically, the more virtual our experiences get, the more extreme our real-world activities become. This can be traced to the cross-pollination of parkour culture with urban video games such as Assassin's Creed or Mirror's Edge (fig. 4). Similarly, electronic social networks facilitate a public display of privacy often breaking social norms even though the actual communication occurs in the confines of private solitary spaces.

Virtual environments no longer mimic the physical world that surrounds us. They manifest functionalities unique to this technological genre and facilitate a new thinking about social networks. With their own identity and unique narrative logic virtual worlds permit users to redefine themselves. Users can experiment with alternative identities unconditioned by their offline world. This digitally facilitated identity, in turn, starts permeating back into everyday lives and informing what is expected or acceptable within physical world. This cross-pollination between the virtual and the physical is a fundamental marker of contemporary life.

These location-based games redefine our relationship with the built environment and, more importantly, with each other. They allow interactions with strangers in ways uninhibited by socio-cultural conventions, assuming alternative identities and forming ephemeral, yet fulfilling, relationships with anonymous urban co-habitants. They fulfill Eliade's concept of fulfillment associated with contributing to, or being part of, a greater cause. While these can be delightful moments, the question this paper also pursues is how these new electronic interactions cause us to redefine physical and social structures of everyday lives. To what extent digitality informs physicality and physicality is rooted in our digital worlds.

**SOCIAL GAMES AND ARTS IN URBAN SETTINGS**

Recent technical advances and the broad adoption of mobile computing have created new opportunities for greater integration of digital technology with the physical environment. Mobile phones have become powerful handheld computers that not only assist us in daily routines but also facilitate new forms of connectivity and affect the ways we operate within our social structures. They have become favorite traveling companions[4] and, more importantly, a new interface between us and the surrounding world—an interface we are increasingly fond of and unwilling to separate from. Whether checking the outside temperature, reading traffic reports, or just calling the next-door neighbor, we rely on mobile devices as an intermediary in our dialog with the outside. Distance or inability to make direct contact is no longer a prerequisite for their use. While waiting for the subway or riding on a bus, we turn to our mobile devices for communication, information, and, increasingly, entertainment. Whether we call it learning, relaxation, or having fun, mobile phones deliver it effectively through pipelines of ubiquitous networks.

More and more, electronic communications are perceived as equal to other forms of social interactions. Increasingly, being social means being connected and part of the grid. Research shows that the deprivation of electronic connectivity creates the same feelings of abandon in young people as is the case with non-electronic social interactions.[5] While this alarms some and pleases others, the factual outcome is a world formatted to the size of the phone and parsed into bites of images, tweet-sized poetic communications, and data with a minuscule lifespan of importance. We are beyond the point where we can discard this as an age or gender thing. Mobile devices are here to stay in one form or another. The more relevant question is how this technology is, or perhaps should be, used to empower individuals and enrich society.
With the advancement of ubiquitous computing and the overflow of data, location and context become critical. Relevant information delivered in a captivating yet simple way is at a premium. The context, either geographic or semantic, emerges as a critical filtering mechanism, a mechanism that differentiates between otherwise monochromatic digital landscapes. In such a scenario, mobile devices become effective facilitators of social interactions by allowing users to read and embed digital location-based content. Multiplayer gaming environments, electronic social networks, or mobile location-based games enable a diverse range of encounters without the need to personally engage with others face-to-face or reveal one's identity. Digital media make it easier for many to engage with strangers, particularly for those who feel apprehension in interacting with strangers or just want to explore their inner self in a social context that is not predefined. Now, through augmented-reality (AR) apps, these games are entering our physical surroundings, becoming context specific and a lot less virtual. As Simon Games puts it: “Games are the new cinema, they are breaking free from the console and hitting the streets. These games are a new way of exploring ideas, meeting people and having fun. Hugely social, they are a new entertainment form.”[6]

Originally developed by scientists at the University of Singapore,[7] Human Pac-Man ported an iconic 1980s arcade game into the physical environment, integrating mobile phone technology with a GPS locative system. The AR version of the arcade game used the streets of Singapore as the backdrop for the scenery and game navigation. The game was a direct translation of the original Pac-Man game concept, presented through a first-person shooter perspective [fig.5].

The same concept was used in other projects such as Pac Manhattan,[8] where parts of Manhattan around Washington Square Park were temporarily into a physical-virtual game,[9] or more recently, in the Layar AR Pac-Man developed by NHTV Breda University of Applied Sciences.[10] While the Human Pac-Man stayed true to the original game's me-versus-the-machine approach, utilizing GPS functionalities with a mobile screen as the window into the game environment, Pac Manhattan is an analog version that involves a multiplayer approach and traditional voice phone communication. The Pac Manhattan game is a less dynamic version of the original game, with players on the streets reporting their positions through the phone to human controllers who input data into the game console. In Pac Manhattan and other games of the same genre, the mobile technology is not yet the all-encompassing and all-knowing information framework, but rather a combination of multiple functionalities.

Pac Manhattan shares opportunities and impediments with massive multiplayer online (MMO) video games. While it provides an opportunity, though not yet the functionality, for social interactions with other players, it also is “dead” (off-line) for most of the time. Like MMO games, it requires the availability of concurrent players, and as such, it is most effective as an event-based activity. Another example of a mixed-reality game, “Can You See Me Now?”[11] is a chase game played simultaneously on the streets of a given city and online. Online participants can interact with the “ground” team, exchange tactics among themselves, and collaborate on the mission.
Through the game interactions, online players gain a unique reading of the city through the eyes of the ground team. The physical urban context and feet on the ground provide an additional layer of spontaneity and unpredictability that makes games more exciting.

The Urban Interactive initiative blends mobile technology, improvisational actors, and a scavenger hunt or mystery-solving urban challenges. “It’s like being inside of a reality TV show. Without the cameras,” organizers claim, adding, “We merge reality and fantasy...and sometimes it isn’t easy to tell them apart.”[12] Urban Interactive uses its own proprietary mobile app—Urban Sleuth—in combination with prechoreographed acting sketches and traditional geocaching to diffuse the boundary between the ordinary and the unexpected. Game participants trace throughout the city while solving mystery puzzles. Occasionally, an improvisational actor appears and provides players with additional clues. However, this cannot be taken for granted, since game participants are never sure if the advice comes from an actor-agent sent by game organizers or just from strangers walking by who are willing to share their opinion.[13] In many ways, Urban Interactive feels less like a game and more like an elaborate artistic happening. Developed for individual events, such as college orientations and team bonding, these games feel closer to theatrical productions designed for refined cultural consumption rather than open-ended gaming worlds with adaptive narratives. Nevertheless, they provide an interesting conceptual combination of technology and arts that integrates well with the city life and its fabric.

Urban Interactive and Pac Manhattan place the game action within open urban environments. The events are partially prechoreographed, but they are still the subject to the spontaneity of everyday public life and social reactions. For example, participants in these happenings can try to enlist passersby to gather information about opponents, ask for directions, or request other forms of assistance. In some instances a supposedly random passerby can actually be another game participant disguised as a pedestrian. This mixture of virtual with physical, and real with fictional, forms evocative narratives that redefine what is acceptable within public spaces. These narratives also provide a sense of mystery while reflecting and connecting to a broader media (consumption) culture. While Pac Manhattan is reminiscent of earlier geocaching games that relied on the simpler technology of GPS receivers, two-way radio, and online broadcasting, Urban Interactive proposes events that combine elements of reality TV and theatrical production. These events are more in tune with current media tastes but stray too much from interactive participation toward performance consumption.

The above examples are interesting game propositions; however, they may not be able to sustain themselves in the long run. Their gratification is temporary and feels like an extension of leisure time, not an effective way to learn, conduct business, or fulfill the broader needs of everyday life. A number of location-aware apps attempt to fill this gap. AR games and environments are often an intended part of the commercialized world. The gamification of business transforms location-aware apps into customer monitoring or opportunity-seeking applications. The pervasive Amazon.com phrase “Customers Who Bought This Item Also Bought” reflects on this paradigm. With the growing adoption of location-based applications including Foursquare, Yelp, and Google+, businesses are increasingly looking for new ways to
engage their customers. Apps like VouchAR find discounts in local stores using their own database and also by searching others’ sites, including Groupon. Using the context-aware functionality, the app presents users with shopping choices—deals within immediate geographic proximity. While this is certainly an innovative technology, in many ways it virtualizes the physical shopping street setup present in many commercial districts. In this case, AR technology may allow for the reduction of advertisements and billboards in cities by porting them from the physical to the virtual.

A similar transformation, relating to graffiti and tagging, is being actively pursued by the city of San Francisco, where “arts officials are embracing what they say is a digital-age solution to the decades-old problem of graffiti.” [14] These initiatives are made possible by AR authoring apps such as ARTags or Tagwhat that allow content creation and placement within AR environments. This new content delivery method for the “decades-old problem” points to another important distinguishing feature of AR environments. Unlike the physical city, which by its shared nature is always “on” and WYSIWYG (what you see is what you get), the AR world can be turned off and can be either WYSIWYG or non-WYSIWYG, allowing for privacy within the public realm.

Virtual environment allow for explorations of inaccessible or not-yet-materialized designs. They can be precursors of future physical urban spaces and potent drives in their realization. This is the case with AR and gaming environments (fig.6) developed by Tremont Underground Theater Space (TUTS) initiative. This initiative is using AR gaming media not only to popularize ideas of the adaptive reuse of the abandoned public infrastructure but also to build social constituency and connect with general public.

There are also old-fashioned war games. Like the highly successful “World of Tanks” game discussed earlier, which is bound to the computer box, the AR Conquar is a location-based strategy game that combines the traditional MMO environment and location-based social networks similar to foursquare. While it is still a relatively simple game, something like Risk, Conquar represents a current trend in grounding virtual environments in physical settings. It connects the war theater to actual, physical surrounds to make players compete for various control points.

EMERGING OPPORTUNITIES

The shifting focus from virtual-reality (VR) environments toward mixed-reality and AR frameworks indicates the reexamination of earlier visions of separated physical and digital worlds. The emerging picture fuses both dimensions into a single continuum. The newfound physical context adopted by AR games encourages players to push the boundaries of social conventions and accepted public behavior. Unlike more passive forms of entertainment such as reality TV or even active-yet-confined console-based
games, the AR framework incorporates physical activities and social interaction as well as encouraging exploration, learning, and discovery. Furthermore, as activities integrate digital media culture within the built environment—cities—these games provide an insight into our physical-digital selves and better understanding of ourselves and our communities.

The gamification of life and the contextualization of the virtual, discussed in this paper, directly connect to the dialecticism of digital physicality and physical digitality. When Urban Interactive entices possible customers with the teaser, “You are the protagonist in the story. Why watch a movie, when you can be inside one?”[15] it resonates closely with Simon Games’ declaration, “Games are the new cinema.” The new media are getting an increasingly strong hold on physical reality and are transforming the ways we operate within it. Whereas the gamification of contemporary life is already an acknowledged trend in business, education, and social networks, the reverse tendency—the contextualization of virtual selves in the form of location awareness or the physical actualization of avatars—is still being shaped by our hesitation toward restructuring our physical surroundings. What does it mean for reality when the digital becomes physical without losing its intrinsic dematerialized/virtual properties?

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