Senses of/in the city: A speculative and conceptual exploration of sensory spaces of play in the digital city

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Abstract

The digital city is a space of sensory play that contains the visceral embodiment of digital pleasures (Smith et al 2019), extended or mixed-reality environments (Heemsbergen 2021) and aesthetic encounters (Maddox et al 2022). We observe the shift from only the platform economy to the mediated experience of a city and articulate the ways in which that can be achieved (via the big platforms and otherwise) in social digital-physical connections. An embodied sense of the social in these spaces can be derived through unpacking conceptual work on social effervescence (Olaveson 2001), sensory playfulness, and digitally mediated intimacies. We characterise these social moments of interaction, engagement and participation through intensities and immediacies of experience that involve intention and symbolic focus. Focusing on the sensory, playful, and digitally intimate cities space can also be understood as a way of inscribing desire lines in urban environments that can often be hostile to pleasurable and non-commercial forms of engagement (Smith and Walters 2018). Our approach creates a vector between the urban geography of a city, its digital architectures and a playful and pleasure-ful built environment. We argue that these vibrant moments of encounter in the digital city can drive creativity, place-making, and a sense of belonging that manifest in localised ways.

Prologue

I'm sitting in a chair overlooking a mountain range, contemplating, and waiting for the caffeine in my system to work its magic. Two brain cells are battering together attempting to jump start the process and I'm waiting for the words to flow. But there remains silence. Instead, I listen to the sounds around me. Birds, water running, dogs barking, a truck passing, conversations changing in volume with the wind. I smell the fresh cut grass. While I remain quiet, my senses extend and explore the city in ways that I cannot see or touch. It is both immediate to me but removed. I feel the city. Its sounds, sights, textures, temperatures, and smells embed in my emotional world and memories.

The city surrounds me and wakes up with me. It is a European township perched in mountainous Catalonia and is technically referred to as a city. Shutters clack as they open and settle into place. A phone rings somewhere. I ponder how many ringtones I've heard in the last day and which ones annoyed me the most or made me laugh. It makes me think of a description I once heard about where an anthropologist studied the sounds of locks and security practices in the homes of Johannesburg residents; the clanging of a gate, the turning of a key, a ritualised practice as night fell. I'm yet to locate that work but in searching for it I encounter terminology such as 'reading urban spaces', the 'co-constitution of urban environments', the 'embodied city'[1], the 'social production of urban space', and 'urban rhythms' that point to the way that the everyday spaces of the city are experienced viscerally and made or created moment by moment by urban dwellers moving through them. It is also clear here that I must once again revisit the work of Walter Benjamin for his treatment of the porosity of space and perhaps, yet again, revisit his idea of the flaneur. However, there is no digital thinking here. Why not? Just because I use a digital lens does not mean I forget the embodied experience of the city as a crucial way of being in - and making sense of - the world.

But I diverge. Yesterday, it rained, a torrent, leaving puddles in the streets and overflowing gutters. My shoes got wet, so did the rest of me. Cold and soggy, I made my way up the streets, shaking my head at my lack of forethought to pack my umbrella. It's yellow, a bright slash amongst the concrete. A colourful exclamation mark. The city is experiential, looming, and I move through it, my hat dripping, one of many, the hoi polloi.

Introduction

This article begins a speculation on how the city is experienced in/with the senses. We identify the trajectories of thought that will help us to retain the embodied experience of the city alongside an exploration of the city as a mixed-reality environment. In doing so, we seek to position the city as a co-creative environment, a space of social action that crosses the physical and the digital. We also seek to add gravitas to ephemeral encounters and playfulness as meaningful spaces of social action.

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[1] I found this quote in particular to be evocative: "The author aims to discuss an aspect of the city that has remained hidden or at least undertheorized in the dominant currents of urban writing – that is the embodied city. The corporeality of social practices concerns not only the sensuous, generative and creative nature of lived experiences, but also how these embodied experiences themselves form a basis for social action." (Simonson 2003)

This approach is intuitive but requires the alignment of several bodies of work in order to ground it as a social reality that connects with the larger currents of socio-technical transformation in the digital city.

A digital city is one characterised by a central built environment consisting of the physical built environment all the way through to code. As Banks (2023) notes, digital platforms are fundamentally intertwined with the development of contemporary cities. In this book *The City Authentic* Banks focuses on the city of Troy in upstate New York, as a way of interrogating how cities go from "relative obscurity to social media darling" (2023: 8). Banks' framework of the the City Authentic speaks to how "today's attention economy begets a cynical, post-modern tapestry of symbols, brands, and algorithmically selected aesthetic motifs that are anything but unique or meaningful" (2023: 9). Banks highlight how cities are now expected and encouraged to compete within the attention economy in ways that fundamentally shape how the city is lived and experienced. What this means is that the city is interacted with by its residents both materially and digitally. It also means that the city is located within its urban geography and through its digital traces. The 'digital turn' in urban planning is part of a long history of urban design trends that have fundamentally shaped the cities we live in today. Banks draws clear lines of connection from the movements such as 'The City Beautiful' which reshaped Napeolon's Paris, to the City Efficient, which drove the logic of many cities in the US in the early 20th Century, to the latest iteration of urban logics (the City Authentic) to demonstrate how cities have always been shaped by capitalist logics of attention and money. It digital augmented and algorithmically structured

The city is augmented and extends through the sensory realm both materially and through memory and over time. We encounter it in the now, embodied, through its experiential presence in our past, and symbolically in our hopes for the future. In these encounters we create moments that have a sense of intensity and immediacy that have impact beyond their ephemeral and visceral nature. We capture them, often with our phones, through geo-tagged images that we trail across social media, and through story, that we share in the intimate recounting of our daily travails, sorrows, and joys. We read the city through these moments and encounters. We wrap meaning and memory into mixed-media realities that become the resonant strings through which our imagination augments the city beyond place and through creativity.

The play space of the city

The city as a space of play is neither a new nor sociologically shallow concept. de Lange (2015, p. 428-9) observes that notions of the "playful city" have existed on several levels and in diverse forms, spanning the spatial, social, and mental spheres of urban life. Cities have long been seen as centres of entertainment and fun while play, de Lange (2015, p. 429) argues, has at times been diminished through association with "mere entertainment" or as "childish, stupefying or opium for the masses." Almost as depressingly, he observes play in the city has been absorbed by work itself, through the conflation of labour and leisure time and the accompanying ethics of the creative class (Rifkin, 2000; Florida, 2002; Himanen, 2001; Scholz, 2013; Fortunati, 2015).While discussed in relation to children's development and the development of civil society (Hart 2002), and sustainable wellbeing (Rawlinson and Guaralda 2011), we argue that urban play and playfulness in the city is for everyone and may serve as a subversive practice within the context of ad hoc urbanism (Abbey 2023).

Rawlinson & Guaralda (2011) argue that with successful integration into our cities, urban play performs an important role in physically, socially, and culturally contributing to the image of the city. Consequently, play in the city can be seen as a place-making project, one of the ways that we develop a sense of neighbourhood in a large city and imbue city objects with human values, associations, and memories (Dargan & Zeitland 1990). Play and games in the city have also been framed as participatory city making (de Lange 2015) and as a way of fostering citizen engagement (citation).

A body of work on ludic architecture connects play and games to the built environment of the city. In this vein, Oudenampsen, (2013) discusses the work of Dutch architect Aldo van Eyck, who after WWII sought to renew ruined cityscapes with outdoor play spaces in the Netherlands "as a way to counter top-down functionalist planning policies and open up room for people's own creativity". From this approach we can also see that while play is associated with urban regeneration, it is also with individual expressions of creativity.

At the intimate level of the individual, Goffman framed playful encounters as containing eight essential dynamics present in gaming encounters: (1) games, play, and gaming; (2) spontaneous involvement; (3) ease and tension; (4) incidents; (5) integrations; (6) flooding out; (7) structures and processes; and (8) interaction membranes. It is the last two aspects, interaction membranes and structures and processes that we want to unpack further here. Dargan & Zeitland (1990) describe Goffman's description of play as a focused interaction that creates microcosms of social experience in which the outside world is held at bay - a kind of threshold space or space of exceptions, much like the prefigurative nature of temporary autonomous zones (citation), in which players create a new world within. Playful encounters in immersive sensory environments, constituted by multi-platform interoperable environments, hold the potential to act in such ways. Goffman argued that the rules of playful transformation tell players how the real world will be modified inside the encounter. We argue that through this immersive 'membrane' that forms around playful encounters, a sense of intimacy can be generated from the closeness of sharing a world apart.

To think through the collective action that can be drawn from this ephemeral sense of closeness playfully generated in the sharing of a 'world apart' we consider the notion of social effervescence described by Olaveson (2001) and Hopkins et al (2016). Olaveson positions this notion as formed through the bubbling up of a spontaneous, temporary, and self-generating social energy or joining of feelings and ideas that it is communal and collective (Olaveson 2001). Hopkins et al (2016) further describe it as a shared identity within a crowd that brings a sense of connection with others characterised by mutual intimacy, warmth in social relationships, acceptance, and recognition. We characterise the ephemeral social moments of playful encounters through intensities and immediacies of experience that involve intention and symbolic focus. We argue that these vibrant moments of encounter in the digital city can drive creativity, place-making, and a sense of belonging that manifest in localised ways.

Sensory playfulness and digital pleasures.

This extended spatiality of the digital city does not mean that residents are disembodied or partially engaged when they interact with its digital terrains. Immersive technologies such as augmented reality or mixed-reality environments have begun to make embodied interactions and intimate playful engagement with the city possible at scales and in ways we are only yet to be able to fully imagine or experience.

The literature on geomedia suggests some already-existing playful modes of engagement with/in the city. Broadly, geomedia refers to media, most often apps, that use Global Positioning System (GPS) technologies to locate users in physical space. Research has highlighted that location-based mobile media technologies affect an individual's experience of memory and place by allowing them to archive place-based memories with geo-locative media (Frith and Kalin 2015). On the other hand, FourSquare, a popular geolocative app in the mid 2010s, was initially formulated around a more competitive or gamified ethos. Users would 'check in' at places and businesses, an affordance that was unique amongst digital applications when it first launched. The more times you checked in, the higher your rank, eventually, if you checked in enough times, you became the 'Mayor' of that location, a status that was visible to other users of the app. In essence, FourSquare and other check in apps turned moving through urban space into a game, and a space of play, linking memory and playful affect to place through geomedia platforms. Over time other platforms have begun to offer check-in options, including Facebook and Instagram (Frith and Kalin 2015). The broader social function of geomedia is that they serve to map social networks in urban spaces (De Souza e Silva and Frith 2010). These applications all allow their users to engage with physically (but not necessarily) relationally close others and provide a technologically facilitated way to (re)encounter strangers in urban spaces.

Importantly, Hjorth and Pink (2013) argue that the location-based service offered by applications like Instagram means that geotagging is becoming the default practice for sharing digital images, particularly those taken with a smartphone camera. This rise in geotagged experiences that are captured and portrayed through visual media suggests that geomedia platforms are an important site of mediation for sensorial encounters with the city. However, in the broader literature the focus is on how individuals use these applications and affordances to navigate places, not on how places are collectively constructed on geolocative media like Instagram and Facebook. This remains an important absence in understanding how digital representations of place, like places themselves, are collective and contested. They exist beyond the parochial realm of self and friends. It becomes larger than the sum of its parts or as Massey (2005) says, "a constellation of processes" of which, we argue, play forms an important part.

In thinking about how the processes of digital mediation might affect the experiences of - and the rhythms with which we engage in - urban life, Lefebvre offers some points for consideration in his work *Rhythmanalysis*. Here Lefebvre argues that, "that technologies kill immediacy (unless the speed of car, place of automatic cameras pass for a return to the immediate; but that isn't saying much). The impact of technological conquests does not make the every day any more alive.." (p. 53). We see echoes of this concern in Bank's (2023) work, where digital platforms turn urban spaces into inauthentic spectacles, in some ways alienated from themselves. However, we can (re)read into this work to conceptualise sensorial and playful encounters. For Lefebvre, the temporal rhythms of life fall into two categories, the cyclical (the rhythms of natures, seasons, the body) and the linear (the

blows of a hammer, a dripping tap). Cyclical temporal cycles delight us, while the linear may be dull, exhausting and grinding. For Lefebvre, media belongs to the linear, it is repetitive in nature. However, he argues that the 'monotony of the everyday, rhythmed by the (mediatised) media need not bring about the forgetting of the exceptional." Here lies the enticing possibilities of how we might intertwine the cyclical and linear rhythms of life in and through digitally mediated cities.

De Lange's (2015) work seeks to build a research and design agenda around play in the city that connects urban research and design with the research and design of play and games. In doing so, he signals connections with the smart city and shifts in interactive technologies that build digital environments of encounter for play within the city. Whilst not following this specific agenda tightly, this article resonates with aspects of it, while focusing more closely on the sensing and sensory environments of the city that arise to support playful encounters. Although this work does not directly address the smart city agenda, it presents the city as digital and considers potentials for mixed-reality environments to enhance these playful encounters.

Rather than follow the fields of game design as underpinning mixed-reality urban play, however, we want to situate the work more in the embodied experience of the city that draws from our research into digital pleasures - capturing the subversive nature of pleasure-ful and playful encounters. Immersive or augmented playful spaces constituted by mixed-reality environments can be created to be socially inclusive. For example, immersive installations sensitive to people with neurodiverse needs, or to make experiential city spaces and cultural events accessible for those with mobility challenges. They can also be considered as more than a momentary installation, and be extrapolated out to whole-of-city digital infrastructures through convergences in aware and responsive sensory technologies - such as more affordable VR technologies, 360 imaging, 3D sound technologies - generative AI, and inter-operable digital commonsing environments such as the metaverse (Yang and Wang 2023).

While Virtual Reality is often thought of as a futuristic technology, it already has mundane uses in everyday life (Ludlow 2015); we are not as far from this future as we think. Burdea and Coiffet (2003) describe how VR is a construct of technologies used to create a 3D environment experienced by users through sensory perception, physical movement, and text or speech communication. Additionally, amongst VR researchers and media scholars, it is an established approach to characterise these environments as on a continuum from true virtual reality, mixed reality and augmented reality that ranges from fully immersive experiences in a wholly artificial world to the incorporation of some elements of an artificial world into the real world to add information (Milgram et al., 1995). Another name for this suite of technologies is volumetric media, given that it spatialises both visual and sonic data (McIlvenny, 2020). Heemsbergen, Bowtell, and Vincent (2021) push this idea further to argue that while scholarship in this area focuses on the boundary between the virtual and the real, it is vital to conceptualise mixed reality experientially. Consequently, they argue for an understanding of volumetric media as 'perceptible spatial computation' that augments relations between objects (electrons, atoms, humans).

In her consideration of augmented ethnography in digital society, Maddox (2023) begins a description of emerging sensory environments that we use here to set out the sensory play-space of the city. She points out that while headset technologies such as the Oculus Quest for 3D immersion

or the HoloLens for 360-degree holographic virtual experience act similarly to the smart-phone as a viewing window, they often seek to immerse the user into a visual environment. Part-way through the immersive continuum are smart glasses and eye-tracking technologies, exemplified through the failed Google Glass experiment. These technologies have been combined in Apple's most recent VR headset release, Vision Pro. It allows for a porous experience between a VR immersion and interacting with an augmented overlay onto environments for the user through externally focused cameras, but also creates the illusion for an external viewer to 'see' the eyes of the person wearing the headset. Maddox (2023) argues that through this viewing window of the head set or the phone, we are transported into another context that we can move through visually, interact with and listen to through an accompanying spatialised audio soundtrack. These visual, interactive, and sonic features can be combined to create an immersive experience that is very immediate, in the lived sense, that may play with and entangle our sense of time and memory within and across playful encounters.

Research into digital pleasures such as ASMR (Smith and Snider, 2019), binaural beats in sleep apps (O'Neill and Nansen, 2019) and the advent of digital drugs delivered via binaural beats (Barratt et al 2022) and cam sex through fans only (Ryan, 2019) highlights a new mode of sensory tactility that imbricates digital platforms with bodily pleasures. Smith et al. (2019) explore the concept of resonant media to articulate how platforms combine with bodies to produce a digital body instru-ment in which physical sensations are intentionally generated by the consumption of digital content in an immersive present. This phenomenon is not just an extension of the pleasure gained from listening to music, but an intentional stimulation of bodily responses delivered by content creators, often through a combination of visual and sound-based approaches.

Research into digital pleasures opens new possibilities for playful encounters in immersive spaces that imbricate the body into the sensory environment. In their work on haptic media and inclusivity Paterson (2017) argues that gestural and haptic technologies that have emerged through the interconnectivity of smartphones, consoles, and VR, offer ways to rethink the embodied nature of user interaction across digital contexts. Media theorist Andrejevic (2020) offers a brief observation on haptic media that extends that range of possible dimensions for sensing from haptic to olfactory, infrared, and affective. Similarly, Valtonen et al. (2010, p. 375) observe that researchers primarily focused upon an audio-visual world view rather than considering the other senses of touch, taste, and smell. Consequently, in an argument that retains its currency, they highlight the need to explore the entire sensory domain in order to gain better insight into contemporary consumer culture, and for our purposes, playful encounters in immersive sensory environments in the city.

Generative environments of play
The final aspects of an immersive sensory environment that we will consider here are the advent of the metaverse as an interoperable digital commons and the recent rise of generative AI to enrich social creativity. Focusing on these two trends allows us to highlight the probable chimeric nature of immersive sensory environments of play, and the role of non-human actors in playful and creative engagement in them.

The metaverse presents a potential for us to imagine an augmented city of the future with multisensory settings. Nabben (2021) argues that the metaverse is the outcome of linking digital and

physical spaces to such degrees that they are fully integrated, creating hybridised experiences. Similarly, Mystakidis, (2022, p. 486) defines it as a 'post-reality' universe characterised by a perpetual and persistent multiuser environment merging physical reality with digital virtuality. It is not a singular place, but any virtual reality (digital space) or augmented reality (physical space enhanced by a digital overlay) that is built and accessed through computer interfaces. A metaverse is constructed through the movement from a set of independent virtual worlds to an integrated network of 3D virtual worlds (Dionisio et al 2013). Dionisio et al., (2013) highlight four features that constitute a metaverse, across the virtual and real worlds: realism, ubiquity, interoperability, and scalability.

The metaverse, as reality and virtuality converge, is argued to change the paradigms, norms, rules, and the way we define experience (Prodinger & Neuhofer, 2023). The experience of the metaverse is then facilitated by enabling technologies such as Extended Reality, AI and blockchain (Lee et al 2021). This represents a shift from only the platform economy to the mediated experience of a city that operates both within and beyond such constraints. We argue that immersive sensory environments may act similarly to the leaky ship of digital infrastructures found in the Dark Web, appearing to be platformic one moment by privatising what was once public, then later publicising the private and thus appearing to be infrastructural. (Gehl and McKelvey 2019). This notion of fluid transitions between public and private in the metaverse evoke the notion of a digital commons. Teli et al (2015) describe a digital commons as a third-way institutional arrangement to manage specific resources, be they natural or digital, that is neither the state or the market, but rather a collective effort of the people directly interested in managing the resources through means that are based on democracy more than on hierarchies. Similarly, Harvey (2012, p. 7274) suggests that a commons is typically positioned at the level of self-organising collectives and somewhere between the public (state) and the private (market or individual). It is in these visions that we can perhaps see how immersive and sensory environments hosted within metaverse structures may take on attributes that are identifiable as falling within platform economies but operating at scales and through interfaces that are not quite captured within this frame.

Another attribute that may be worth considering here is the role that non-human actors may play in shaping and provoking playful and creative encounters, the integration of generative AI within metaverse and immersive contexts. To begin this speculation, we need to break down the metaverse definition a little more. Yang and Wang, (2023, p.2) describe the metaverse as consisting of three building blocks, the application layer (information processing and content generation), the interactive layer (interface technologies between users and the information systems) and systems layer (hardware technologies and computing systems). They observe of the interactive layer that these technologies allow information delivery and interaction from both directions: human to machine and machine to human. Generative AI intersects across the application and interaction layers to both generate content and become a non-human (inter-)actor in the system.

Suh et al (2021) give us an insight into the possible role of non-human actors in playful and creative encounters in immersive sensory environments. As early as 2021, they observed that advances in deep generative neural networks were making it possible for artificial intelligence to actively collaborate with human beings in co-creating novel content. More recently, we have seen the rapid emergence into the marketplace of generative AI technologies such as Chat GPT (for content

generation), Midjourney (for image generation) and Aimi (for music generation). Suh et al (2021) observe that AI may play important roles in influencing human social dynamics during creativity, including: 1) implicitly seeding a common ground at the start of collaboration, 2) acting as a psychological safety net in creative risk-taking, 3) providing a force for group progress, 4) mitigating interpersonal stalling and friction, and 5) altering users' collaborative and creative roles. They argue that generative AI will embed in social creativity by enriching, impeding, or altering creative social dynamics. Given that playful encounters are associated with creativity in the city, we can be assured that generative AI will become an active agent within such environments, and perhaps a playfellow in our experiences.

Ad hoc navigation of the sensory city

Given the enhanced playful space of the city, we can start to think about how people may idiosyncratically navigate, and disrupt, aware and responsive sensory environments. To do so, we turn to the urban wayfinding concept of desire lines and consider how it may be extrapolated digitally. Desire lines articulate an agential wayfinding practice within the built environment that aligns with the social production of urban space. They are created by people navigating beyond formalised pathways and creating a hack to follow an intuitive path from here to there. Desire lines, Smith and Walters (2018) argue, are resistant, complex and contingent navigational practices that are constructed through a logic of efficiency or discovery and in solidarity with other users to take a space beyond its intended use. This premise of discovery maps neatly to playful engagement with, and in, immersive and sensory environments.

Desire lines have been conceptually explored within urban planning to design for people's preferential movement through public space. Abbey (2023, p. 78) refers to these practices as guerrilla or *ad hoc* urbanism or autonomous geographies, signalling the subversive spirit of idiosyncratic wayfinding.

> …these unsanctioned improvisatory use patterns can convey information about what people require of their public places and provide justifications for expanding or altering programs to create public spaces that provide commons to a diverse citizenry for the purposes of living, regenerating community, and asserting civic rights and responsibilities. (Abbey 2023, p.77)

Given these observations, the informal practices generating digital desire lines may be considered transformative - prompting new structural pathways across immersive digital commons. In our work on dark social spaces (Maddox & Heemsbergen 2021) we applied Smith and Walter's concept of desire lines to the navigation of this emergent environment of the Dark Web. Through this conceptualization, we understood that the subject can navigate an imposed spatial order through creating unsanctioned lines of use. The desire lines of the Dark Web demonstrated that built environments, from physical place to code, are not static but bend and change in response to human agencies and act as the formative pathways through which solidarities and politics occurs.

In her work conceptualising cross-platform conversations in social media, Smith (2021) provides further thought tools for characterising the generation of desire lines across sensory environments. Her key argument is that modern communication is a complex and multiplatform accomplishment,

with conversations sprawling across multiple platforms and in and out of visibility. She observes that users spread their activity across any number of social media platforms, according to social and personal logics, with conversations weaving through DMs and private messages and public spaces. Drawing on the work of Burchell (2017), she argues that the relational ordering of available media technologies by people is "highly idiosyncratic, resonating with the notion of digital desire lines that we develop here as a navigational approach for sensory environments. What we can add to this concept from Smith's work is that navigation in digital contexts can also be about how we navigate interactions across frontstage (publically visible practices) and backstage (private interaction practices) environments. While this is essentially a platform logic of social media, it seems likely that this weaving in and out of visibility and public/private spaces will continue to characterise playful encounters in immersive sensory environments.

Conclusion

In this article we have discussed the attributes and purposes of playful encounters in the city, and the types of technologies that are likely to create the immersive sensory playspace of the city.
We have then moved to stitching these spaces together into an interoperable mixed-reality environment through the notions of the metaverse. We have suggested that as reality and virtuality converge, this will change the paradigms, norms, rules, and the way we define experience. We then argued that immersive and sensory environments hosted within metaverse structures may take on attributes that are identifiable as falling within platform economies but operating at scales and through interfaces that are not quite captured within this frame. Finally, we point to the likelihood that playful encounters in sensory environments are likely to incorporate non-human actors such as generative AI, to be a creative playfellow. Shifting from the nature of the environment to our movement through it, we have built out the wayfinding notion of desire lines to capture ad hoc and idiosyncratic navigational practices through sensory environments.
To this end, we have argued that participants will likely navigate playful interactions across frontstage (publicly visible practices) and backstage (private interaction practices) environments.

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