Routledge Research in Sustainable Urbanism

GAMES AND PLAY IN THE CREATIVE, SMART AND ECOLOGICAL CITY

Edited by
Dale Leorke and Marcus Owens

Games and Play in the Creative, Smart and Ecological City

This book explores what games and play can tell us about contemporary processes of urbanisation and examines how the dynamics of gaming can help us understand the interurban competition that underpins the entrepreneurialism of the smart and creative city.

Game and Play in the Creative, Smart and Ecological City is a collection of chapters written by an interdisciplinary group of scholars from game studies, media studies, play studies, architecture, landscape architecture and urban planning. It situates the historical evolution of play and games in the urban landscape and outlines the scope of the various ways games and play contribute to the city's economy, cultural life and environmental concerns. In connecting games and play more concretely to urban discourses and design strategies, this book urges scholars to consider their growing contribution to three overarching sets of discourses that dominate urban planning and policy today: the creative and cultural economies of cities; the smart and playable city; and ecological cities.

This interdisciplinary work will be of great interest to students and scholars of game studies, play studies, landscape architecture (and allied design fields), urban geography and art history.

Dale Leorke is a postdoctoral researcher at the Centre of Excellence in Game Culture Studies at Tampere University, Finland. His research focuses on the role of games and play in the cultural and economic development of cities. His other research interests include mobile and location-based media, participatory planning and civic engagement, and the intersection of cultural institutions and urban policy. He is the author of *Location-based Gaming: Play in Public Space* (Palgrave, 2018) and coauthor (with Danielle Wyatt) of *Public Libraries in the Smart City* (Palgrave, 2018).

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Foreword

The ‘No Ball Games’ sign is ubiquitous in public spaces around Dublin, Ireland. In a city where ball games such as soccer and rugby are promoted as part of local culture, it is now a taken-for-granted part of contemporary urbanisation that they are spatially limited and almost fully commodified. It was not always like this. Photographs of the newly independent Dublin 100 years ago are replete with children who are playing in the streets with footballs and marbles. These games were voluntary, unregulated and mobile. Indeed, recruits of revolutionary groups appropriated hurling sticks for marching as a symbol of cultural nationalism and physical training. James Joyce set *Ulysses* during one day in the city, criss-crossing the savoury and not-so-savoury parts of the city. The history of the city is full of stories and songs of games and play. Perhaps it is unsurprising to a reader of this book that games, play and sports should be viewed as both dangerous and ripe for commercial appropriation.

The regulated and unregulated social production of urban space has long been a fascination for geographers, sociologists and communication scholars (Corcoran, 2012; Gieryn, 2000; Humphreys, 2010; Lefebvre, 1991; Massey, 2013; McLuhan, 1964). They offer us relational conceptualisations of the spaces, places and experiences of people rather than the abstract ways sometimes used to understand cities. They also note how the deterritorialisation and power of communications and media technologies shapes, and is shaped by, both national and local social and cultural practices. Social relationships and practices are becoming thoroughly mediated in contemporary cities, but the outcomes of these processes are uneven across space, and certain languages, cultures and representations dominate. In many urban spaces, the everyday movements of workers, sounds and bodies are heavily regulated and commodified, often to conform to patriarchal, ethnic, religious and socioeconomic norms. Areas in city spaces are created or re-created to appeal to visitors and tourists. They are arranged to conform to certain photographic or social media conventions, and people who are out of place are removed or moved on. Cultural services prioritise certain forms of leisure, certain ways of seeing and ways of telling. In sports and commercial games of all types, competition is prioritised. Winners become legends.

Where industrial and religious architecture and sounds once dominated urban spaces and the movement of people, today’s urban spaces are increasingly

conforming to the demands of more-secular and post-industrial flows of knowledge work and workers. City governments are a key player in the redesign of cities, and many city planners and policymakers have embraced the conceptualisation and policy prescriptions of the creative and smart city. Contemporary theories of the creative and smart city focus on the economic, organisational and governance aspects of the city, paying little attention to the experiences of its existing inhabitants (Lawton et al., 2010; O’Keeffe, 2014). Studies have consistently found that top-down area regeneration plans can result in the erasure of existing communities and cultures in their bid to direct economic and planning policy towards specific forms of economic activity and to conform to certain aesthetic ideals (Lawton, 2009). Culture is valued if it can be commodified – a culture as resource approach (Yúdice, 2003). Creativity is something to be used to create commercial technological solutions. Creative workers are those who work within strictly defined industries.

In a similar way, the dominant approaches to the smart city are about directing city governance and resources towards a new form of technologically enabled governance delivered in partnership with private companies and sometimes by private companies. Smartness in cities usually involves monitoring, measuring and delivering individual, social and city services more efficiently. Although in some cities smart services relate to traffic flows, public bicycle schemes, bins and monitoring pollution, there are many issues with who, how and where these services are provided. Smart city initiatives rarely discuss the fact that most of these services rely on grafting proprietary technologies and privately managed services onto pre-existing technical and nontechnical public systems (Coletta et al., 2019). Most smart city initiatives must engage with deeply embedded social institutions and practices. They rarely plan for and engage with discussions about sustainability beyond superficial platitudes, particularly as it relates to environmental and social sustainability. The focus is much more on monitoring and censure. While public urban spaces and private urban spaces may deploy sensors to monitor environmental degradation, it is less clear whether the sensors are contributing to environmental pollution. What we do know is that every like, swipe and tag consumes energy and depletes the energy stores of the city. Smart heating monitors may use as much energy as they save. Further, critical scholars have asked important questions about the degree to which people in a city should be monitored and measured and the degree to which they consent to it, or know about it (Dencik et al., 2017; Kitchin, 2014a, 2014b). Most smart city services reduce citizens to data traces, advertising targets, consumers and users. They tend to cut across, challenge or erase pre-existing rights, communities and social practices.

Cities are spaces and places that already produce, consume and use digital games and play in a myriad of ways. Companies and individuals produce games, and some cities are explicitly attempting to become nodes in the global flows of gamemaking (Kerr, 2017; Kerr & Cawley, 2011). Under the guise of creative economy policies, or creative city policies, some cities and towns have developed game development clusters with the support of public/government tax or financial incentives. Such clusters aim to incubate companies and encourage localised

knowledge spillovers and networks. These are often located near universities or colleges. Areas of Montreal, Paris, Brighton and Tokyo are associated with game companies and game clusters and have lively local game worker ecologies. Countries and states are also involved in trying to lure footloose companies, by using financial incentives. France and the UK have introduced a games production tax credit aimed at both attracting companies to locate there and keeping existing ones (Kerr, 2013). Other cities have become associated with professional game tourism. The annual Game Developers Conference in San Francisco and the European Game Developers Conference in Hamburg bring thousands of knowledge workers to a large conference centre for weeklong events that are often too expensive for indie or artistic gamemakers to attend. The AMAZE festival, meanwhile, takes a different approach by moving from city to city to bring artistic gamemakers together. Finally, some cities, regions and countries have become associated with certain games, and local authorities have attempted to exploit these cultural associations as resources for cultural tourism and city branding. Abertay in Scotland has a reputation as a location for games education and incubation. It is also attempting to promote its reputation as a game development location through games produced there, including *Lemmings* and *Grand Theft Auto*. Which games get promoted is fraught with localised tensions and taste cultures.

Our everyday experiences of digital games and play in urban spaces are shaped by global platforms and local data flows intersecting with play practices. For many players, the experience of mobile games in the city is one mediated through devices and is often about disengaging from the surroundings rather than engaging with them. It is about creating individualised playscapes with earphones to block out the sounds, people and places of the city and the home. These mediated spaces insulate us from the physical, social and cultural uniqueness of particular urban places. For some, the experience is often about generating mobile private spaces that block out the questions and enquiries of random strangers (O’Keeffe & Kerr, 2015). For games with built-in geolocation, the city and its people become environments and avatars for play but often within highly commodified parameters. A local park or a local shop may intervene in the otherwise-transnational play experience. Gaming conventions and esports events meanwhile bring players together into new commercial social spaces in our cities. Game jams, board game meetups and live-action role play and game societies provide spaces for face-to-face meetings and socialised forms of play. Gamemaking challenges and programmes invite people to produce new representations and interfaces to influence social, cultural and environmental change. Players may find ways to hack, challenge, cheat or ‘counterplay’ in ways never anticipated by game designers. Artists, activists and other actors may deploy games for noncommercial playful purposes. For players, games and play are part of individual gaming biographies, reshaping one’s local sense of place even as they reach across multiple intersecting social, political and economic relations and spatialities (Hjorth & Richardson, 2014; Massey, 2013).

Just as we might want to reclaim public spaces as spaces for voluntary, unregulated and noncommodified forms of games and play, we might also want to

consider how digital forms of games and play can assist our rethinking about citizen engagement in urban spaces, places and nature in the post-industrial contemporary context. Others have already started to map how digital media is being deployed in playful ways to enhance civic participation and engagement in everyday politics and caring for the environment. They note that many media are becoming more ludic and are recasting how we think about design and use all media (Glas et al., 2019). Furthermore, playful media technologies can be deployed to engage citizens in myriad ways – leveraging citizen creativity for the public good. This rethinking of the relationship between games, play and the urban can recognise the locally contingent and bottom-up needs of citizens and publics. It is perhaps one route to redirect our relationship with smart urban platforms towards more-empowering purposes. As with all participatory design and engagement practices, however, we need to be alert to how game technologies can alienate and exclude. Games and play have varying cultural, social and political implications in urban contexts. It would be a mistake to presume that participative design is empowering and that design capabilities are freely available to all (Harvey & Fisher, 2014; Kennedy, 2018). The uncritical incorporation of games and play into urban planning and theories may risk merely reproducing gendered, classed, raced and abled urban environments and risk reducing who gets to play in safety in urban spaces (Kerr, 2021). It may also reduce access to scarce environmental and social resources to a winner-takes-all competition.

This book is one of the first full-length books to explore the relationship between games, play and contemporary urban discourses. It presents several chapters that explore how games and play are deployed to variously critique and interrogate the creative, smart and ecological city. Although urban scholars have focused on the social production of space for generations, and communication scholars have engaged with space and time since the beginning of modern forms of communication, we must acknowledge that digital games affect our experience of space and place in both positive and not-so-positive ways. Given the dominance of the urban in many parts of the world, game scholars should engage with the existing literature on the urban across the social sciences and the humanities.

Some have already made important contributions. For example, game scholars have long noted that public game competitions and public forms of digital gameplay can be highly gendered spaces and are not accessible to all (Bryce & Rutter, 2003). As a result some have been forced to game in private domestic spaces. Over the past decade, networked, mobile and location-based games have become widespread in many countries. Similarly, smart technologies are slowly defusing into our homes and cities. Both smart cities and networked games share high-speed telecommunication networks, extensive data-gathering and advertising infrastructures and the potential for high levels of dataveillance. Few digital gameplay experiences can be offline and private anymore. Creative research, theories and solutions will be required if future gameplaying is to be socially and environmentally sustainable and accessible to all in urban contexts.

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1 Introduction

Connecting games, play and urban discourse

Dale Leorke and Marcus Owens

This collection explores the intersections between game studies, play studies, media studies, urban studies, urban geography, the design disciplines and other related fields. It examines how games and play can connect with, extend or challenge contemporary urban policy discourses that often ignore or overlook them. We focus on three overarching sets of urban discourses and agendas:

- 1 The creative and cultural economies of cities;
- 2 The smart city and its counterpoint, the playable city;
- 3 The ecological city, which encompasses themes of sustainability and resilience in urban planning and design.

Rather than provide a comprehensive analysis of these three discourses of urbanism and the city, the aim of this book is to highlight and critically dissect how games and play emerge within and between them.

The smart city has become one of the most dominant approaches to urban governance around the world. It has spurred cities into investment in networked technologies and infrastructure – sensors, location-aware trackers and the Internet of Things devices – as well as big data analytics tools to crunch the data that these technologies generate in real time. In some ways, the smart city grew out of the creative city model for post-industrial urban accumulation, which aims to attract workers from the creative and cultural sectors through urban renewal and beatification strategies – in the process often contributing to gentrification, marginalisation and uneven economic growth.

Both the smart city–influenced and the preceding creative city–influenced discourses aim to ‘brand’ the city in a particular way – as a creative, smart, fun and liveable place. In this milieu, games and play frame the experience of urban space and contribute to the cultural and economic life of cities – through game production; game festivals and playful activities; and artistic interventions into urban space that reappropriate or reconfigure smart city technologies to make the city more playful and playable. Meanwhile, games and play can also serve as strategies for grassroots campaigns and civic engagement that form a crucial aspect of urban sustainability and resilience initiatives.

Although the field of game studies has examined the way games take form in urban spaces, it generally is not concerned with the relationship between games and the production of space that occupy urban theory. Similarly, urban planning and policy discussions, we contend, often overlook the more intangible, diffuse and nuanced ways that digital, nondigital and hybrid forms of games and play contribute to the everyday experience of urban life across a variety of domains. Although research in these fields is growing, few interdisciplinary approaches to these issues exist. Most discussions tend to be siloed within their respective field, whether it is the humanities or social sciences, or tethered to either theoretical or design-oriented approaches. Despite clear intersections between these fields and approaches and the value of engaging in cross-disciplinary dialogue, the nature of academic journal publishing makes a truly interdisciplinary approach challenging. Furthermore, discussions around this topic centre largely on a single policy approach or issue – most prominently, the smart city vs playable city debate, which understands games and play as an alternative to the top-down, instrumental, efficiency-driven agenda of the smart city. While these discussions are fruitful, the broader scope of this proposed collection creates the potential for comparisons, contrasts and deeper analyses on diverse urban policy and discourse problems.

In this light, contributions to this collection include comparative case studies, such as those that examine how specific games and playful projects complicate, contradict or complement visions of the near-future city as seamless, responsive and adaptable to the challenges of urban life and infrastructural management. Other contributions include broader theoretical and historical discussions that unpack the entanglement of games and play in smart, creative and sustainability/resilience discourses. Lastly, contributions include provocative yet cogent and critical examinations of play and playfulness in the city more broadly: how play as a concept, practice and discourse itself might disrupt or reinforce existing uses of urban space. Through these contributions, we seek to address the following overarching key questions:

- What is the historical relationship between games, play and urban discourses surrounding ecological cities, creative and cultural economies and ‘smartness’?
- How are games and play both assimilated in urban governance – through investment in game development and start-ups, civic games and outdoor public play – and mobilised as a counter to it?
- How are urban games unfolding in the broader transformations of the city in the digital era, and how can game and play studies contribute to a better understanding of contemporary processes of urbanisation?

In addressing these questions, this book seeks to provide an empirical basis for producing a theory of games and play linking developments in the creative and cultural economies of cities; the technological optimisation envisioned by the ‘smart city’; and the various strategies of the ‘ecological city’. In the process, it broadens the debate around games, play and urban discourse – something of

growing importance to a wide range of stakeholders as games continue to grow in mainstream recognition – and paves the way for future comparative, policy-oriented scholarly approaches.

Our approach in this book has been to simultaneously provide a broad context for discussing games and play – one that is not tied down in semantic definitions of either – and narrow this discussion to centre on the three specific sets of discourses mentioned earlier. In choosing to include both games and play in this book's title, we acknowledge that these terms come with their own discursive histories and definitional dilemmas (see Henricks, 2015; Lütticken, 2010; Nagel, 2002). The aim of this collection is not to rehash these long-running debates but to acknowledge them and open them up even further by putting them in dialogue with discourses around the 'urban' – which is itself of course also a contested term (see Brenner & Schmid, 2015; Robinson, 2002; Ruddick et al., 2018). We acknowledge that the majority of the case studies and examples discussed in this collection are games – which we understand as both structured, rule-bound texts/artefacts and, particularly given the urban, public context, also dynamic events or 'processes' (Malaby, 2007). But discussions of play figure into some of these discussions as well, especially concerning urban public play as an 'interface' or 'mode of engagement' with the people and environment around us (see Sicart, 2016; Stevens, 2007, 2012, 2017). In adopting this broad and conceptually diffuse approach, we also acknowledge the multifarious and complex nature of games, play and the urban, viewing them as in constant flux rather than as fixed and static.

The novelty of this book primarily stems from its focus on the three sets of urban discourses described earlier. Our intention is to foster a dialogue between these discourses among scholars and practitioners of urban games and play. There is, of course, already a wealth of literature on the practical and theoretical intersections between games, play and urbanism. This includes a number of prominent and valuable books, both established and recent, that examine these intersections from many perspectives:

- Location-based and pervasive games and play (de Souza e Silva & Sutko, 2009; Farman, 2014; Leorke, 2018; Montola et al., 2009; von Borries et al., 2007);
- Civic engagement and participatory planning (Glas et al., 2019; Gordon & Mugar, 2020; Lerner, 2014; Stokes, 2020);
- Urban design, planning and mapping (Lammes et al., 2018; Stevens, 2007; Wilmott et al., 2016);
- Smart and playable cities (de Lange & de Waal, 2019; de Waal, 2014; Nijholt, 2019, 2017; Tan, 2017);
- The funding frameworks and spatial distribution of game production (Kerr, 2006, 2017).

This is not intended to be a definitive list of books on these topics. Rather, we highlight particular books that we think have strong synergies with our own approach. This is also to say nothing of the continuously growing number of

individual journal articles, book chapters and scholarly and mainstream essays on these and related topics. But this is the first book to explicitly address how games and play contribute to studies of urbanism, urban discourse and urbanisation from a range of disciplinary and policy perspectives – encompassing creative/cultural, technological and ecological debates. With this in mind, we aim to provide a clear scholarly contribution to all these disparate fields of research and (at least partially) help erode the silos within which they so often take place.

The remainder of this chapter outlines the structure of the book. We devote a considerable amount of discussion to summarising, synthesising and critically examining the three discursive fields that we have selected as the focus of this book. The three discourses that we highlight are by no means exhaustive of this topic, and we acknowledge that many alternate and related approaches deserve equal attention. But these are the discourses that we consider most clearly and explicitly linked to the field of games and play that also dominate scholarly, policy and mainstream debates during the particular window of time we pursued this book. They also encompass at least some of the crucial challenges confronting urban policymakers today: managing post-industrial economic growth in an inclusive and equally distributed manner; dealing with the consequences of ubiquitous networks in the urban environment; and covering the imperative for cities to be sustainable and resilient. In the process, they connect with numerous broader discussions: the societal and cultural value of games; games production and creative labour; the right to the city and urban public space; anxieties and imaginaries around new technologies; making urban planning more inclusive and participatory; and the implications of anthropogenic climate change.

In the process of focusing on these discourses, however, we overlook the potential to explicitly engage with other crucial issues in the urban context that games and play also contribute to: the role of gender, class and race in urban policy and the everyday life of cities; differing cultural understandings of games and play; and configuring cities for animals and other nonhuman play. As we discuss at the end of this introduction, although some of the chapters touch on some of these issues, we recognise the need for a deeper engagement with them and others both in future research in this area and in potential future iterations of this collection. The following three sections outline the three sets of discourses identified earlier and then summarise and situate each of the individual chapters in them. We begin with *the creative and cultural economies of cities*, followed by *smart and playable cities*, before concluding with *ecological cities*.

Part I: The creative and cultural economies of cities

Cities and games have long been associated with notions of creativity and innovation (Jacobs, 1984; Lütticken, 2010). Like contemporary ideas of sustainability and digital computation, the second half of the 20th century saw the emergence of an academic discourse that articulated the importance of industries and practices deemed creative in the social and economic development of cities. This literature spans scholarly and policy realms, with each alternately informing and

influencing the other. It also now extends back several decades, eluding easy and succinct summary in the process. Further complicating any attempt to succinctly summarise this literature is the problem that discourses around the intersection of culture, creativity and social and economic policy have been – and always will be – highly contested and volatile. Such discourse is inherently susceptible to competing and sometimes-irreconcilable visions of how creative and cultural industries and practices should be supported and funded by government agencies. In addition, these visions change along with governments and evolving scientific consensus.

Numerous terms have been posited since the 1980s to encapsulate the people and industries deemed creative and thus valuable to city planners and policymakers vying to make their municipalities competitive in the post-industrial era. These include, mostly notably for our discussion, ‘creative industries’ (Hartley, 2005), ‘creative economy’ (Howkins, 2001), ‘creative class’ (Florida, 2002), ‘cultural industries’ (Hesmondhalgh, 2002; Miège, 2011) and ‘cultural economy’ (Scott, 2000). Each of these terms carries its own nuances and idiosyncrasies, most notably about which sectors or workers are encompassed by them. Some centre only on practices traditionally deemed creative – like architecture, arts, design, and media and entertainment. Others also encompass some combination of jobs that involve creative thinking, such as business, engineering, finance, healthcare, law, science and software development. These definitions vary according to the criteria used to classify these workers: education, employment, occupation, industry sectors or any combination of these.

To complicate matters further, scholars and policymakers frequently remix these terms into new ones – for example, the cultural and creative industries – specifying a broader or narrower definition, depending on their object of analysis, policy objective or philosophical or theoretical standpoint. As Markusen et al. (2008) point out, the terms ‘creative’ and ‘cultural’ are ‘contested’ and ‘fuzzy concepts’ that can be difficult to pin down and are often conflated, poorly distinguished or simply misunderstood by many who use them. And to top all this off, each of these terms has been subject to often-scathing critiques by academics who contest the assumptions underpinning their conceptualisation or the criteria used to define the workers and industries they encompass. They point out that such terms exclude or marginalise certain people or promote a neoliberal economic agenda (see Flew, 2011; Leadbeater, 1999; O’Connor, 2011; Peck, 2005).

Situating games and play in this complex and contested milieu is challenging, given the aforementioned ‘fuzziness’ in defining the creative and cultural sectors and given the disparate ideological imperatives that inform economic and cultural policy at the national level – let alone at the local/city level. As Aphra Kerr (2017) points out, even pinpointing where games production itself fits into definitions of the creative and cultural economy is problematic. She writes, ‘one might think that after 40 years of existence that the companies in this industry would be easy to identify in existing industrial statistics, employment and occupational data. This is not the case’. Kerr – who adopts a cultural industries approach – notes that this is due to the way game production resists easily classification because it

involves both creative/artistic labour and technical/design labour, encompassing 'both instrumental software and more aesthetic software production in the one [employment] category' (2017, p. 6).

This complexity is magnified tenfold when moving beyond the (at least somewhat) demarcated realm of commercial digital game production to contemplate the role of games and play more broadly in the creative and cultural industries. Doing so would encompass the many other practices related to games and play that are not inherently tethered to the mainstream games industry but nonetheless have a cultural and economic impact: festivals; carnivals; artistic games and publicly funded games; participatory planning and civic games; interactive playful installations and events; street theatre and performances; and game-related tourism. These are just the most immediate and perhaps obvious examples. What should we add about informal but semi-organised and semi-regulated practices like public chess tournaments, informal street games, skateboarding, parkour and busking? How can the cultural and economic contribution to cities that these disparate activities, which are all nonetheless in some way creative and playful, be measured and understood?

In our original call for papers for this collection, we identified 'creative cities' as the focus of this section. In many ways, these debates coalesce most concretely around the 'creative city' agenda, which brings these discourses to bear on urban planning and policy. Coined by Charles Landry, but heavily informed by the arguments and ideas espoused by Richard Florida in his book *The Rise of the Creative Class* (2002), the creative city brought these debates around the role of the creative and cultural economies in economic development to bear on urban planning and policy. Equally embraced by policymakers (see Peck, 2005; UNESCO, n.d.) and maligned by academics and commentators (Markusen et al., 2008, p. 27; Mute, 2009; Pratt, 2009), the creative city posits that cities hinge their economies on the creative class of workers that comprise the arts, media, finance, health, law and technology sectors. This means attracting the members of this class to their spaces through urban regeneration and beatification initiatives, liberal/progressive social policies and investments in the arts, culture and technology sectors.

Our original call invited papers that reflect on the relationship between games and play and the 'economic exigencies of the "creative city"' and asked 'how might urban games reflect broader transformations of labour in the digital era, and how can game studies contribute to a better understanding of contemporary processes of urbanisation?' In the process, we sought to identify games as one of the key creative industries as it grows in revenue and public recognition as both an artform and an engine for economic growth. And we aimed to frame games and play as significant but overlooked features of renewal projects aimed at making city spaces attractive to the so-called creative class, such as through street festivals, outdoor public gaming events and public space 'activation' and 'placemaking' initiatives. In doing so, we invited discussions and critiques of how games and play figure into the creative city, both as engines of the urban economy and as an increasingly prominent feature of urban life.

Yet none of the contributions we received addressed the creative city model head on – perhaps unsurprisingly, given the still-nascent scholarly attention paid to the role of games in economic and cultural policy (see Kerr, 2017, p. 9) and the aforementioned toxicity that surrounds the creative city model. But we suspect that this may also be due to the manifold ‘fuzziness’ we’ve outlined, around games as an industry; games more broadly as both texts/artefacts and events; play as an elusive and difficult to define concept; and creativity and culture as contested terms.

As a result, we decided to title this part of the book ‘The creative and cultural economies of cities’. Rather than align ourselves with a single concept or category to examine the role of games and play in urban discourses around creativity and culture, we use this deliberately broad term to encompass these various discourses and the wide range of topics included in this section. In doing so, we wish to move beyond the creative/cultural dichotomy and address the way games and play fit more broadly within these demarcated but contested economic realms of cities. We use ‘economies’ (plural) deliberately, to signal the way these discourses vary greatly from region to region, most notably between the UK/Australian/New Zealand creative industries-dominated context; the broader, European cultural and creative industries approach; and other countries with their own distinct sets of definitions and policies, such as Brazil and Japan, which also feature as case studies in this section.

This part of the book opens with a short chapter by **Dale Leorke**, titled ‘Games, play and playfulness in the “creative city”: a brief overview’. It provides an overview of the literature on the creative city and the processes that led to its emergence, before identifying how games, play and playfulness instrumentally serve the creative city’s underpinning goal of attracting knowledge workers to its spaces. Leorke argues that games and play can and do accomplish this in three overarching ways: through their existence as a creative industry; by promoting cities as playful and playable; and by instilling citizens with a creative ethos. Consequently, the chapter serves to frame the debate around the connection between games, play and the creative city and provide a framework – and set of provocations – for future research on the role of games and play in urban economic policy and the growing imperative for cities and citizens alike to be playful.

The next chapter is ‘Promoting Yokosuka through videogame tourism: the *Shenmue* Sacred Spot Guide Map’ by **Carlos Ramírez-Moreno and Dale Leorke**. It is the only chapter in the book that focuses on a non-Western case study (albeit written from a Western perspective), examining how government workers in the city of Yokosuka leveraged the cult *Shenmue* videogame series to attract tourists. The *Shenmue* Sacred Spot Guide Map was designed by workers in the city’s Tourism Division as part of its contents tourism strategy to lure Japanese and foreign tourists away from the more commonly frequented Tokyo–Yokohama urban corridor in the face of economic and population decline. Through interviews with the guide map’s creators, fieldwork observation and an analysis of the map, the authors argue that the guide map provides an insight into the overlooked and

underexamined potential for games to contribute to the local economies of cities through tourism – even as it remains a small-scale and unique example of this.

The final chapter in this section is ‘Geogames for change: cocreating the future of cities with games’ by **Alenka Poplin, Bruno de Andrade and Ítalo Sousa de Sena**. This chapter has strong resonances with Part III of the book as well, but we situate it here as an example of the broader way games can contribute to the social and economic improvement of cities through participatory planning. The chapter examines case studies of two games designed by the authors aimed at encouraging children and young people to understand their city better and contribute to its future development. These include the card game *Geodesign Card Game* and the *Minecraft*-inspired digital game *GeoMinasCraft*. Their discussion overlaps with the issues described earlier on around planning for inclusive and equal urban economic growth, by articulating how these and other geogames might ‘support the weakest or marginalised in our society and create more inclusive, sustainable and ludic cities’.

Part II: Smart and playable cities

The smart city, as we noted earlier, has supplanted the creative city as the dominant planning discourse in cities today. It has spurred investment by policymakers in initiatives such as the development of entirely new cities on greenfield sites, designed from the ground up with smart technologies and ubiquitous connectivity in mind; and smaller-scale ‘smart suburbs’ of sorts that are retrofitted with sensors and fibreoptic cables (Greenfield, 2013, p. 12).

As Adam Greenfield (2013) documents in his scathing (but cogent) treatise *Against the Smart City*, the smart city originated in the meeting rooms of corporations like IBM and Cisco seeking to weave their smart, responsive systems and Internet of Things devices into the fabric of the city. Promising to offer urban authorities continuous, real-time, responsive management of their city – including traffic, public transport, crime, electricity, water and sewerage – smart city technologies have been successfully pushed on policymakers by these companies as solutions to the problems of urban planning and management. As Greenfield (2013, pp. 13–14) puts it, ‘it’s as if the foundational works of 20th-century urbanist thought had been collectively authored by United States Steel, General Motors, the Otis Elevator Company and Bell Telephone rather than Le Corbusier or Jane Jacobs’.

The smart city is both an imaginary that alternately embodies utopian and dystopian visions about the future city and an urban planning strategy that continues to have a concrete, material effect on the development of countless cities around the world. As an imaginary, it has become the fulcrum for anxieties and hopes about the effect of digitisation and networked technologies on future cities, encompassing debates such as equality, neoliberalism, privatisation, surveillance, resilience planning and sustainable development (see Amin, 2014; Mattern, 2016; Halpern & Günel, 2017; Greenfield, 2013; Sennett, 2018; Shepard, 2014). It also builds on and extends earlier techno-utopian imaginaries and dystopian concerns

about the intersection of data, networking and virtual space with physical space (see Apprich, 2017), projecting them into visions of a near-future city characterised by sentient systems and perpetual connectivity.

As an urban planning strategy, the smart city is reshaping urban development on almost every continent. This includes the construction of (overly) ambitious, troubled and still-unrealised new city developments like Masdar City in the United Arab Emirates, Songdo International Business District in South Korea, Konza Technology City in Kenya and the Indian government's promise to invest in '100 smart cities in five years' (see Khare, 2019; Onyango, 2018; Poon, 2018; van den Bosch, 2018). But it also encompasses the many small-scale and far-more-visible implementation of smart technologies and infrastructure at the municipal level in existing cities and districts. Cities as diverse as Auckland, Barcelona, Chicago, Copenhagen, Guangzhou, Helsinki, Melbourne, Mexico City, Nairobi, Rio de Janeiro, Singapore, Tallin and Tel Aviv have all adopted the smart city as a central component of their future strategic planning.

At the same time, as Tooran Alizadeh (2017) notes, there are essentially as many definitions of the smart city as there are smart city developments. Each city or region has its own interpretation of a smart city, adopting certain elements of the respective technology companies' marketing discourse that they choose to invest in on the basis of their particular geography, population and political and policy objectives. Nonetheless, at a generic level, the smart city involves the roll-out of three layers of technology across the city (see Leorke & Wyatt, 2018). First, at the level most materially visible to citizens – although often still deliberately obfuscated from view (Townsend, 2013, p. 24) – is the physical *infrastructure* of smart cities embedded in the urban environment. This includes sensors, radio frequency identification tags, GPS trackers, and other 'sentient' or Internet of Things devices that capture and transmit real-time data about the environment and people in it (Gabrys, 2016; Mattern, 2016). Second, there are the enormous volumes of raw *data* (or so-called big data) that this infrastructure generates and transmits to the servers of tech companies and local government authorities, which is sometimes also made open for public use (Kitchin, 2014). Lastly, the layer least accessible to citizens but most alluring to policymakers consists of the *platforms* that these data feed into. Such platforms take the form of urban dashboards and 'operations centres' created by companies like IBM that process big data in real time and produce visualisations of the city's functions that urban authorities can observe, intervene in and manage as they unfold. We summarise these three layers in Table 1.1.

Discourses around the smart city tend to focus on the economic, political and social implications of these technological layers. But as Jonathan Jae-an Crisman, Ken S. McAllister and Judd Ethan Ruggill point out in their contribution to this book, smart city discourse also evolved from 'libertarian, corporate and entrepreneurial-minded ideologies in tandem with creative cities visions espoused by figures such as Richard Florida'. Like the creative city model discussed in the previous section, the smart city relies on instrumentally leveraging the creative and cultural sectors for its future growth. It equally seeks to promote the city to

Table 1.1 Summary of the three technological layers of the smart city.

	<i>Description</i>	<i>Examples</i>
Infrastructure	Sensors, smart/sentient infrastructure, and Internet of Things devices embedded in the urban fabric that capture and transmit real-time data about the urban environment, buildings, infrastructure and inhabitants.	pedestrian counters, environmental sensors, smart bins, smart streetlights, smart electricity grids and wearable health technologies
Data	The raw data about the city produced by the aforementioned smart infrastructure and extracted from other sources (i.e. census, government agencies, industry). This data is stored and managed by governments at various levels (local, state, provincial, regional, national, etc.).	pedestrian counts, public transport schedules, parking bays, age and current usage of buildings, property values, bike paths, street furniture and waste collection
Platforms	Software and hardware that connect to the city's smart infrastructure and process the raw data that they generate. They consist of urban analytics software, urban dashboards or control centres that monitor and manage the city in real time; open data portals that publish free, anonymised data sets for use by businesses, entrepreneurs and citizens; and smartphone apps that visualise this data for the city's inhabitants.	IBM's Intelligence Operations Centre; Cisco's Smart+Connected Operations Centre; Socrata and CKAN's open data platforms; and SeeClickFix and FixMyStreet smartphone apps

Source: Adapted from Leorke and Wyatt (2018, p. 26)

knowledge workers as a ‘fun’ and ‘creative’ place to live and work, adding to this branding the layer of seamless technological efficiency and ubiquitous high-speed connectivity (Hollands, 2008, p. 309; Leorke, 2019, p. 55; Picon, 2015, p. 45).

In this sense, games and play already figure directly into smart city strategies, even if they are rarely explicitly mentioned in them. As Leorke (2019, p. 55) has noted elsewhere,

As one of the key ‘creative industries’, digital games are a significant – and continually growing – component of the knowledge sector that most smart cities’ future economic growth is predicated upon. As such, policymakers in smart cities seek to attract game designers, from the headquarters of global game studios to startups producing mobile and indie games, to their spaces.

These initiatives to attract game designers can take the form of direct investment in incubators, coworking spaces, hubs and game jams that support start-up

companies and teams, including independent game developers or emerging studios. But it can also encompass practices like outdoor games festivals, interactive public art installations and participatory planning or civic engagement games that more diffusely seek to conscript gamemakers and everyday citizens into smart city visions (see de Lange, 2019; Glas et al., 2019; Lerner, 2014; Leorke, 2019, 2018, ch. 6).

But discussions about the role of games and play in the smart city have centred most prominently on the concept of the playable city. As Anton Nijholt puts it, broadly speaking, the playable city is a model for

build[ing] on the ideas and infrastructure of the smart city to create novel interactions that are intended to inject fun and playfulness into urban environments both as a simple source of pleasure and as a means of facilitating and fostering urban and social interactions.

As he notes, this approach assumes ‘smart technology can make a city more playable, regardless of whether the technology is already available in a city’s infrastructure or is designed for that purpose’ (Nijholt, 2019, p. 3). By reappropriating, reconfiguring or augmenting those smart technologies for playful purposes, academics, artists, game designers, urban planners and designers, everyday citizens and other stakeholders aim to make cities more fun, playful and enjoyable, rather than simply seamless and efficient.

This reorienting of smart city technologies can take place across all three of the technological layers outlined earlier. Artists might repurpose or design new smart *infrastructure*, such as the project *Shadowing* (Chomko & Rosier, 2014). It fits street lights with sensors that record people’s shadows as they pass under the lights and plays them back with a short delay to surprise passers-by and encourage them to play with the sensors to create new animations. Meanwhile, game designers might access their city’s open government data set and design a city-building civic game using local *data* about buildings, parks, amenities, traffic and so on. This is exemplified by Run That Town (Millipede, 2013), a civic planning app that uses Australian census data coupled with narration by comedian Shaun Micallef. And although they belong to the least visible and least publicly accessible layer, smart city *platforms* like urban dashboards might be made playful by incorporating unconventional data and facts about the city or allowing citizens to play around with them (see Kitchin, 2018). Lastly, some playable city initiatives might not use any digital or smart technologies at all. Rather than reappropriating, reconfiguring or augmenting smart city technologies, these projects react against smart city discourses by providing simple, non-screen-based or non-digitally mediated, avenues for reclaiming public space for analogue or hybrid play. They are often framed as providing an ‘escape’ from the ubiquitous connectivity and interfaces of the urban environment (whether this ubiquity is actual or perceived). The crowdfunded street-length waterslide Park and Slide (Jerram, 2014) is perhaps the best-known example.

We summarise these approaches in Table 1.2 and add some examples. Rather than serving as a taxonomy, this table highlights the different ways artists and

Table 1.2 Summary of playful interventions into the three technological layers of the smart city.

	<i>Description</i>	<i>Examples</i>
Infrastructure	Repurposing existing sensors, smart/sentient infrastructure and Internet of things devices embedded in the urban fabric – or designing new ones – that playfully track, monitor or react to the people and environment around them	Asphyxia (prototype; see Chapter 12 in this book), Beta Blocks (exploration zones), Hello Lamppost (2013), Saving Face (2015), Shadowing (2014), Stop, Smile, Stroll (2016), Urban Echoes (2013)
Data	Using the raw data about the city produced by smart infrastructure and other sources for the design of games or playful projects and initiatives	Asphyxia (air-quality data sets; see Chapter 12 in this book), Beta Blocks (data exploration data sets), Run that Town (2013)
Platforms	Making the platforms that connect to the city’s smart infrastructure and data more playful, interactive and participatory or creating new, playful alternatives for these platforms	Beta Blocks (data exploration tool), Dublin Dashboard (2014), Mobility Urban Values (MUV) app (2017; see Chapter 12 in this book), Wayfinder Live (2016; see Innocent & Leorke, 2019)
Low-tech and/or Nondigital	Simple, low- or no-tech playful interventions that do not engage with any of the technological layers listed earlier but that nonetheless rhetorically position themselves against the smart city	Jurassic Tampere (2019; see Thibault, 2020), Park and Slide (2014), A Playful City projects (see Playful City, n.d.), Urban Conga projects (see Urban Conga, n.d.)

designers have approached smart city technologies through play. As a result, some projects intersect with all three technological layers of the smart city. This is the case with Beta Blocks in Boston (Engagement Lab @ Emerson College & New Urban Mechanics, 2018). It consists of multiple components, including various exploration zones that showcase experiments with various types of smart *infrastructure*; and a data exploration *platform* embedded in an amorphous inflatable installation that allows users to experiment with the city’s *data* (see Peacock, et al., 2019, pp. 140–144). Others, like Park and Slide, do not intersect with any of these technological layers but still rhetorically position themselves against smart city discourses (see Baggin, 2014).

As Leorke (2019, p. 57) points out, the playable city is both an organisation called the Playable City and a broader conceptual framework that spun out of this organisation. In this sense, there is both the Playable City (organisation) and the playable city (concept).¹ The Playable City organisation was founded in Bristol in 2012 and primarily funded by the City of Bristol and the British Council. It funds

playful artistic interventions into public space, such as *Shadowing*. It has since spread to at least eight other cities around the world, such as Austin, Lagos, São Paulo, Seoul and Melbourne. According to the vision on its website,

Playable City puts people and play at the heart of the future city, re-using city infrastructure and re-appropriating smart city technologies to create connections – person to person, person to city. Through interaction and creative installations it unlocks a social dialogue, bringing the citizens into a city development conversation – one which will vary in each location.

(Playable City, n.d.)

The Playable City organisation deliberately frames itself as an alternative to the technocentric and top-down technocratic discourse of smart city policies. Its proponents argue for grassroots approaches to urban design that create spaces for playfulness, spontaneity and social interaction rather than visions of seamless efficiency, instantaneous digitally mediated communication and one-way civic engagement imposed from above. As Hilary O'Shaughnessy, research lead at Watershed (the art centre where the Playable City is based), says,

Playable City was a reaction to Smart City narratives, which have changed a lot from when we started but at the time they were very cold and very, 'Well, technology will solve everything and you're either on board, or you're not, so get out of the way'. We find that that's not really a great way to understand the world or change anything or move forward. Especially because the community we're embedded in sees technology as something that we can really use to bring people together and come up with better solutions for how we live, better ways of living together and that there doesn't have to be a human cost to technological development. We can find a way for it to be organic and fruitful, and involve everyone.

(quoted in Hopkins, 2018)

Much of the discourse around the playable city – both from the Playable City organisation and from other proponents of the concept – constructs a binary opposition between smart cities and playable cities. It pits cold, top-down and technocentric smart city strategies on the one hand versus inclusive, participatory and human-centred playable city interventions on the other. This is a falsehood, on two fronts. First, as noted earlier, the Playable City organisation is funded primarily by the British Council and the cities that its projects are situated in. In the process, its projects feed into the same underlying principles of the smart and creative city strategies that those government organisations promote: most directly, branding the city for knowledge workers as a fun and creative place to live and work.

This is not to claim that Playable City projects are really public relations exercises for the cities they take place in. But nor do they necessarily run 'counter' (Reddington, 2013) to instrumental, neoliberal and top-down urban planning agendas, since Playable City projects themselves are entangled in (funded, branded

and selected by a committee that operates in) the creative and cultural policies of their cities. At the time of writing, Playable City had recently shifted to a model of funding small-scale initiatives in numerous cities around the world rather than annual monetary prizes awarded to a single project that tours their ‘branded’ cities – perhaps as a way to address this potential criticism of their assimilation into broader urban planning strategies. While the funding and governance of other playable city initiatives varies, rarely do they operate entirely outside the cultural and economic policies of their cities.

Second, as Troy Innocent points out in his contribution to this collection, smart city policies have evolved from their initial top-down, technocentric visions into smart city 2.0 visions that are also ‘citizen-led with a focus on cocreation, engagement and participation’ (quoted in this collection; see also Trencher, 2019). As Innocent writes, this approach ‘appears to have a lot of overlap with the playable city project. As a result, a binary relationship of either-or between smart and playable cities does not really make sense in practice’. This point is evident in the passage from O’Shaughnessy quoted earlier, who acknowledges that smart city discourses ‘have changed a lot from when we started’ in contrast with the earlier, much-more-antagonistic rhetoric from Playable City founders (see Reddington, 2013). Of course, these ‘citizen-led’ smart city 2.0 visions are often just as vapid and contrived as the smart city 1.0 model, co-opting rather than meaningfully adopting the playable city–influenced rhetoric of play and participation in a form of ‘engagement theatre’ (see Mattern, 2020). But this trend does illustrate a continuing overlap and intersection between smart city and playable city discourses.

Taking these two points into account, we do not frame the smart city and playable city as opposites. Instead, we view them as two separate urban discourses in dialogue with one another. We also recognise the nuanced approaches and sometimes-conflicting positions within each of them. Thus, Part II of this collection employs the playable city term in its broader sense – as ‘a conceptual framework’ for discussing how games and play can respond to the techno-utopianism and technocratic approach of some smart city policies (Leorke, 2019, p. 57) – rather than tying it exclusively to the specific Playable City organisation and its projects. And its contributions seek to build on and unpack the complexity, the ambiguity and the rhetorical positioning that characterise these two urban discourses.

This part of the book opens with a chapter by **Troy Innocent**: ‘Urban play in practice: seven lenses exploring social value in playable cities’. Innocent sets the scene for the overarching concerns of this chapter by outlining what he describes as seven lenses for approaching playable cities. These lenses correspond to the different perspectives that stakeholders bring to discussions around the smart and playable city – citizen, artist, game designer, policymaker and so on – in the process highlighting the complex and sometimes-conflicting interests and ideologies that these discourses bring up. Innocent is an artist, game designer and academic, whose work has been funded by the City of Melbourne and the Victorian state government, perfectly exemplifying this complexity.

The next chapter is ‘The postdigital playground: children’s public play spaces in the smart city’, by **Bjørn Nansen and Thomas Apperley**. This chapter explores

the *infrastructural* and *platform* layers of the smart city in relation to children's public play spaces through two case studies. These case studies involve playgrounds and parks that have been retrofitted with sensors linked to app platforms that encourage digitally mediated play. Their chapter strongly connects with concerns around the platformisation and privatisation – indeed, literally the 'Disneyfication' – of public urban space (Sorkin, 1992) and the co-optation of play by corporations. It also builds on broader debates about the intrusion of digital technologies into every facet of everyday life, including spaces once blissfully 'free' of digitisation, like playgrounds.

No book discussing games, play and urbanism published after 2016 could get away without a chapter (indeed, arguably several) devoted to *Pokémon GO*. **Kyle Moore's** chapter 'Playful mobility and playable infrastructures in smart cities' fulfils this obligation while also pushing discussions of location-based gaming into new directions by connecting them with broader debates around playfulness, playability and mobility in cities. By connecting with playable city debates, Moore explores how existing location-based game platforms like *Pokémon GO* and *Ingress* reconfigure or use the existing 'playable infrastructures' that populate the urban environment.

The final two chapters in this part of the book take more provocative and polemical approaches to the broader discourses and imaginaries around smart cities. 'In praise of stupid: games, play and ideology in the smart city', by **Jonathan Jae-an Crisman, Ken S. McAllister and Judd Ethan Ruggill**, turns smart city discourse on its head, arguing for an appreciation of the stupid, slow and non-seamless features of urban life. The authors begin by framing the articulation of 'smart' and 'stupid' in political and policy discourse as a continuum and then develop an approach to 'stupid game' design. Like the 'stupid city', the authors argue, stupid games recognise the value of open-ended, reflective and nonproscriptive play and its potential to more meaningfully involve players in city planning and policy. Meanwhile, **Matthew Siebert's** chapter 'Expanded phenomenologies: leveraging game engines and virtual worlds in design research for the real' immerses the reader in the virtual worlds constructed in game engines as mirrors that allow us to explore the increasing computation of urban space. Drawing on phenomenology and vignettes detailing his auto-ethnographic exploration of various game engines, Siebert provocatively frames game engines as offering 'a new, multiple and diversified body-schema' that can 'create reliable and systematic knowledge for new urban futures'. Together, these chapters wrap up this part of the book by positing new ways for thinking through the anxieties and possibilities of the smart city and its always-emergent technological future.

Part III: Ecological cities: sustainability and resilience

The final part of this book features three chapters examining the role of play and games in the ecological city. In the initial call for the book, this section was called the sustainable city, with the term 'sustainability' used as a corollary to the creative and smart city and the entrepreneurial implications of those latter terms

discussed earlier. A more specific term than the ecological city, ‘sustainability’ is widely associated with the Brundtland Commission of 1987, which formalised and popularised sustainable development, which was then further articulated in the Agenda 21 adopted at the Rio Earth Summit in 1992. Important precursors to sustainable development were developed in the 1972 United Nations Conference on the 1976 Human Environment and UN Habitat I Conference, which explicitly linked resource scarcity, economic development and the spatial planning and design of human settlements on a global scale. In this regard, while sustainability may be applied to a wide variety of fields, including business management and product design, it also contains an explicitly spatial dimension emerging from the metabolic processes of urbanisation. Therefore, what we are referring to as the ecological city pertains to a specific shift in the relationship between the urban and the natural that has been developing since the late 1960s. This is evidenced in urban Henri Lefebvre’s notion of total urbanisation, and Buckminster Fuller’s advocacy for designing the total environment. Urban sociologists have since described how sustainability discourse increasingly came to view cities as solutions to environmental problems rather than as sources of environmental problems (Angelo & Wachsmuth, 2019).

While analyses of the history and politics of design for sustainable and ecological urbanism abound (Anker, 2010; Ndubisi, 2003), a specific focus on the role of play and games in urban sustainability and ecological design remains somewhat of a lacuna. As this part of the book explores, viewing urban sustainability efforts through the lens of the games reveals unique insights into the contemporary relationship between the urban, nature and design. Two related features of sustainability concern a rescaling of the urban and new forms of participation, which work together to engender a new relationship between the local, the national and the global. Institutionally, urban environmental political movements demanded a say in local planning issues, and nongovernmental organisations (NGOs) are important features of Agenda 21 for achieving sustainability through participatory democracy. Examples from this time period are the environmental planning games developed by Victor Gruen in the 1970s at his Centers for Environmental Planning in Los Angeles and Vienna. Gruen used his games in the community planning process for the design of the New Danube in Vienna, now celebrated as an early best practice in urban sustainability as a multiuse green infrastructure by UNESCO. In this part of the book, **Janette Kim** reflects on her own use of similar environmental planning board games, in the case of *Resilient by Design* in the San Leandro Bayfront in Oakland, California.

In addition to serving as tools for public engagement and mediating conflict in complex urban projects, games and play came to contribute to pedagogical and sociopsychological ends (i.e. inducing ecological behaviour), part of a wider transfer of operational strategies from the military to the civilian sector as ‘serious games’ (see Abt, 1970; Light, 2005). The playful turn in the serious business of sustainability is explored in **Marcus Owens’s** chapter on Buckminster Fuller’s World Game and the New Games, developed by Stewart Brand, that were later adopted by the National Park Service as a strategy for public engagement and

energy efficient recreation during the OPEC Oil Crisis. Meanwhile, **Gabriele Ferri, Mattia Thibault and Judith Veenkamp**'s chapter extends this historical discussion into the contemporary phenomenon of gamification in the pursuit of sustainable development goals, examining both a social app for encouraging alternative mobility and an interactive sculpture intended to communicate air quality. In addition to pedagogy, these chapters also reveal how games provide both a conceptual and a technological basis for understanding the new relationships between nature and the city encompassed in the idea of ecological urbanism and contemporary urban sustainability initiatives.

In fact, games and game theory are at the conceptual core of the idea of sustainability, informed by general systems theory and the modelling of complex ecosystem dynamics. Among the most historically significant of these was the Club of Rome's 1972 *Limits to Growth*, derived from computational models of economic growth and natural resource depletion. Like the 1972 UN Conference on the Human Environment, the Club of Rome identified complex problems that could not be understood in isolation from one another, like environmental deterioration, poverty and urban blight. However, what was significant about *Limits to Growth* (and the EarthWatch programme initiated at the 1972 Stockholm Conference) was the use of planetary-scale computational modelling. As historians of science and technology such as Paul Edwards (1996) have shown, this constituted both a 'closed world' constructed by Cold War weapons systems, the predictive models derived from the game theory of mutually assured destruction and human-machine integration in the form of user interfaces. The evolution of gameplay and sustainability through the lens of digital media, from Buckminster Fuller's World Game to the Mobility Urban Values project discussed by **Ferri et al.**, makes explicit the importance of games in sustainability and their link with the smart city.

As for a technologically mediated, aesthetic representation of nature and the natural, digital games and sustainability reflect the symbolic form of the database. For Lev Manovich (1999), the videogame, with its inherent nonlinearity and interactivity, serves as the ideal media through which to experience and explore the database. In this regard, the link between Buckminster Fuller's World Game and the digital sustainability games described by **Ferri et al.**, is not merely their use of games as participation but also the convergence of social psychology and design in the construction of interfaces to allow users to experience the environmental database that underpins models of sustainability. What Halpern (2015) describes as the communicative objectivity of digital media help make sustainability the 'narrative twin' to bandwidth, and the reduction of resource consumption through an increase in data consumption that justifies investment in innovative industries. This logic can be seen in the early use of digital models in environmental design, as in Ian McHarg's famous environmental suitability matrices, and persists through the parallel genealogy of ecology and design (Reed & Lister, 2014). While discourse in environmental planning has evolved from notions of suitability and sustainability, connoting a climax model of ecosystem development, to the notion of resilience as a dominant concept in environmental planning, describing the ability

of a system to respond to shocks and changes, the use of the game as a means of understanding and enacting the ecological city persists.

In the broadest sense, the game can also serve as a broader metaphor for criticisms of depoliticisation alleged against sustainability and resiliency initiatives (Grove, 2018; Swyngedouw, 2009.) Emerging from the game theory logic of the Cold War, efforts at planetary sustainability also coincided with a geopolitical realignment from east versus west to what is now described as Global South versus Global North, documented early on in Immanuel Wallerstein's global systems theories. In the United States, Nixonian environmental regulations were corollaries to the integration of the global economy, contributing to phenomena such as NIMBYism and increasing inequality as cities became drivers of economic development superseding the territorial container of their nation-states. As has been mentioned, this rescaling of the urban environment is achieved in no small part by NGOs, which the UN identifies as having a 'vital role in the shaping and implementation of participatory democracy' in their Agenda 21 initiative. However, with designers turning to games as they increasingly play the role of mediators between multiple competing publics and experts, information overload can result in a kind of paralysis. In this case, an unending litany of unintended consequences reveals what Horst Rittel dubbed wicked unsolvable problems.

Kim's chapter in this section grapples with this problem of addressing wicked problems, aiming to find ways to use games to recuperate a modernist sense of critique. Such an effort may be juxtaposed against Stewart Brand's interpretations of Buckminster Fuller explored by **Owens**, presenting the ways that ideas of ecological ideas of adaptive management and political strategy of controlled opposition help make games such powerful tools for planetary environmental governance.

How to read this book (and reading against the grain)

We encourage readers to follow the structure we have developed here and read the chapters in the context of their respective overarching discourse. We think this will open up new ways of approaching these particular discourses that intersect with discussions about games and play. But we also wish to emphasise the interdisciplinarity and cross-sectionality of these chapters, noting that the topics they cover frequently 'bleed' into one another and are by no means exclusively tied to the discursive framework we situate them in. Ultimately, we have to structure the book with three clearly distinguished and labelled parts – if for no other reason than sheer practicality. But we also remind readers of our point made in the opening of this chapter: these three discourses together form an amorphous historical and conceptual continuum. The imperatives of the creative city and discussions about the creative and cultural economies of cities inform and have partly been integrated into the smart city, and the smart city in turn has emerged, rhetorically at least, in response to anxieties about sustainability, resilience, resource consumption and looming ecological collapse driven by accelerating urbanisation.

With this in mind, we invite readers to take a playful approach to the structure of the book as well. Contemplate the various ways each chapter might connect

with or spill over into the other discourses that we identify. Seek out recurring themes across the chapters and unexpected connections between them. And question the links we make between the chapter topics and the overarching theme of the chapter (while allowing us a little flexibility given the challenges of putting together a collection with authors from disparate disciplines and research areas). We leave this process largely to the reader. But as a starting point – and to assist readers who might be more interested in specific topics related to games, play and urbanism than in the urban discourses themselves – next we have outlined some alternate structures for the book that highlight other emergent themes.

Civic engagement and participatory planning

Poplin, et al. – Geodesign Card Game and *GeoMinasCraft* case studies
 Crisman, et al. – The Big Easy Budget Game critique
 Ferri, et al. – Asphyxia and Mobility Urban Values (MUV) app case studies
 Kim – In It Together and Bartertown case studies

Location-based games

Ramírez-Moreno and Leorke – Yokosuka-funded *Pokémon GO* and *Ingress* events
 Poplin, et al. – geogames discussion
 Innocent – discussion of the ‘gamer’ lens
 Nansen and Apperley – *Pokémon GO* discussion and *Disney Fairies Trail* case study
 Moore – *Pokémon GO* and *Ingress* discussion

Analogue, nondigital and hybrid games

Poplin, et al. – card games (Geodesign Card Game)
 Nansen and Apperley – Hybrid Play app case study
 Kim – board games (In It Together and Bartertown)

Game ethnography/fieldwork

Ramírez-Moreno and Leorke – *Shenmue* Sacred Spot Guide fieldwork and interview
 Moore – situated play and case study of *Ingress*
 Siebert – first-person vignettes of virtual game worlds

Urban imaginaries

Crisman, et al. – dystopian smart city futures
 Siebert – embodiment and virtual futures
 Owens – ecotopia

Urban play

Innocent – mapping urban play communities
 Nansen and Apperley – playgrounds
 Ferri, et al. – designing for urban play

Urban policy

Leorke and Owens (Introduction) – creative and smart city policies
 Leorke – games, play and playfulness in the creative city
 Ramírez -Moreno and Leorke – subculture contents tourism

In providing these alternate structures, we also wish to highlight the exploratory nature of this collection. This is the first edited collection to bring together contributions on games, play and specific urban discourses, and we always intended it to be a starting point rather than a definitive volume on the topic. In the future, we aim to build on the work undertaken here by pointing to this existing collection and inviting both emerging and established scholars across numerous disciplines to contribute to future volumes or iterations. We also intend to address the issues that we outlined at the beginning of this introduction – concerning gender, race, cultural context, nonhuman play and others – that were partly overlooked by our decision to focus on the dominant urban planning discourses of today. These issues intersect deeply with these discourses, so future work is needed that explicitly addresses them – for instance, a volume specifically on games, play and the ‘good city’ (Amin, 2006) or a special issue critically examining case studies of how bottom-up civic games explicitly address race and class. We hope that this book helps lay the groundwork for these projects and others that continue the discussion around the intersection of games, play and urban discourse.

Note

- 1 Throughout this chapter, we use Playable City specifically when referring to the Bristol-based organisation and playable city in all other instances, when referring to approaches that adopt this, or related, terms (‘playful city’, ‘hackable city’, etc.). For a more detailed breakdown of this distinction, see Leorke (2019, p. 57). Other chapters in this book do not necessarily make this distinction.

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Part I

The creative and cultural economies of cities

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2 Games, play and playfulness in the creative city

A brief overview

Dale Leorke

Introduction

This chapter provides a critical overview of the creative city agenda and how games, play and playfulness more broadly contribute to its objectives. The creative city model pins the future economic growth of cities in a post-industrial digital economy on their capacity to attract members of what Richard Florida (2002) controversially terms the ‘creative class’ to their spaces. While the digital games industry is recognised as a key creative industry bringing these creative workers to the spaces of cities around the world (Kerr, 2017), the broader roles of games, play and playfulness in the creative city remain largely unexamined. Although approaches like the Playable City frame games, play and playful interventions as a counter to top-down urban narratives like the creative and smart city (Playable City, n.d.), I argue that these concepts are continually being assimilated into urban narratives both directly and indirectly. This trend is tied to the growing imperative for citizens and urban policymakers alike to ‘be playful’ – following Angela McRobbie (2018) – in order to thrive in the new economy premised on the economic and spatial reconfiguration of cities in the post-industrial era.

The chapter begins with an overview of the literature on the creative city and the processes that lead to its emergence, before identifying how games, play and playfulness instrumentally serve the creative city’s underpinning goal of attracting knowledge workers to its spaces. I argue that they serve this goal in three overarching ways: through their existence as a creative industry; by promoting cities as playful and playable; and by playfully instilling citizens with a creative ethos. In doing so, I aim to respond to this book’s original call for papers (see the Introduction) by establishing a framework for examining this overlap between the games industry – and playful practices more broadly – and the economic exigencies of the creative city. In this vein, the chapter concludes with a series of provocations for future research on the role of games and play in urban economic policy and the imperative for cities to position themselves as creative, fun and playful.

The coming of creative society

Daniel Bell’s 1973 book *The Coming of Post-Industrial Society* remains the urtext for understanding the broad shift from a manufacturing- to services-driven

economy (although Bell's work was preceded by other books on the topic; see White, 2014, ch. 5). Despite remaining highly variegated and unfolding at different speeds within countries themselves, let alone on a global scale, the inevitable shift towards post-industrialisation underpins the economic policies of numerous countries around the world. The subsequent rise of the 'information society' (Castells, 1996; Miller, 2020), the 'digital economy' (Hesmondhalgh, 2018; Tapscott, 1995; White, 2014) and more recently big data and the 'fourth industrial revolution' (Kitchin, 2014; Schwab, 2017) has only cemented this imperative for governments to prepare for post-industrialisation and the economic impact of digitisation on government policy. The language of creativity, disruption, entrepreneurship and innovation now pervade national government policy in countries from the Asia-Pacific to Europe and the Americas (see Department of Industry, Science, Energy and Resources, 2017; Gov.uk, n.d.; Mari, 2019; National Development and Reform Commission, 2016; National Research Foundation, 2016).

This broad economic agenda has similarly influenced policy at the city level, beginning in the late 1980s and accelerating throughout the 1990s. The decoupling of urban economies from material labour towards a new economy built around immaterial labour and knowledge work has been the subject of scholarly critique since at least the 1990s (see Leadbeater, 1999; Amin et al., 2000). Scholars began to critique urban renewal projects that aimed to transform urban centres – largely abandoned as a result of suburbanisation and the disappearance of factories from their spaces – into trendy hubs for creative, high-tech and mobile workers. Examples include Melbourne's enormously successful Postcode 3000 initiative that turned the city's ailing economy around and New York's controversial rescue of Times Square from implosion. Urban renewal and regeneration initiatives have reshaped city planning around the world – in the process often bringing dislocation, inequality and marginalisation (see Howe et al., 2014; Zukin, 1989).

This economic transformation was spurred by a growing recognition of the importance of physical space in the networked, digital era. The rise of the commercial Internet in the 1990s was informed and subsequently accompanied by utopian visions of an immaterial cyberspace that would be separate from the physical world and beyond the reach of government and corporate hegemonies. John Perry Barlow's 'A Declaration of the Independence of Cyberspace' (1996) exemplifies this utopianism, but it also pervaded popular culture texts, mainstream commentary and academic and policy discourse (Kücklich, 2009, p. 341; see also Chun, 2006; Mosco, 2005; Varnelis & Friedberg, 2008). Such visions were quickly countered by a wave of academic scholarship that pointed out the imbrication of 'cyberspace' and the global digital economy in material spaces and conditions (see Castells, 1996; McCullough, 2004; Sassen, 1991). These accounts identified the embeddedness of the immaterial cyberspace that the digital economy hinged on in material infrastructure (cables, servers, GPS satellites), economies and social conditions. In the process, they highlighted a growing disjuncture between these two realms, demonstrating how the digital economy privileged a select few 'global cities': highly networked and characterised by worker mobility

and by the clustering of specialised talent and firms that manage global financial transactions.

As digital technologies continued to undo traditional understandings of space and economic development, this push towards embracing the new economy of knowledge work, regenerating post-industrial urban centres and recognising the concentration of global finance in key global cities coalesced into the creative city agendas of the 1990s and early 2000s. As much a branding exercise as a blueprint for economic development, the creative city model is a more or less direct translation of Richard Florida's (2002) concept of the creative class into urban policy. This class consists of the 'one-third of all employed people' in the US whose work involves 'creat[ing] new ideas, new technology, and new creative content' or 'complex problem solving that involves a great deal of independent judgement and requires high levels of human capital' (Florida, 2002, p. 8). This definition encompasses people working in the traditional creative industries – architecture, arts, entertainment, design – and in other service industries like science, engineering, business, finance, law and healthcare. To be economically successful, Florida contends, cities must attract the members of this class to their spaces, primarily through urban regeneration and beatification initiatives, liberal/progressive social policies and investment in the arts, culture and technology sectors.

The creative city model has been variously described by academics as 'instrumental' (Pratt, 2009, p. 11), 'crude and politically repugnant' (Markusen et al., 2008, p. 27) and 'a shallow pretext for the further looting of cities and public wealth' (Mute, 2009) – and even worse than this by others. Nonetheless, as Jamie Peck (2005, p. 740) recounts, during the 2000s, the concept proliferated in policy circles around the world:

From Singapore to London, Dublin to Auckland, Memphis to Amsterdam; indeed, all the way to Providence, RI, and Green Bay, WI, cities have paid handsomely to hear about the new credo of creativity, to learn how to attract and nurture creative workers, and to evaluate the latest 'hipsterization strategies' of established creative capitals like Austin, TX, or wannabes like Tampa Bay, FL.

Today, the creative city model has largely been dismissed by many scholars and some mainstream commentators for privileging middle-class consumption over genuine inclusivity and cultural diversity, in the process being all but disowned even by its original proponent (see Wetherell, 2017). Nonetheless, it continues to inform urban policy both directly (see UNESCO, n.d.) and indirectly, through what Angela McRobbie (2018) describes as the imperative to be creative – that is, for workers to adapt to increasingly flexible, precarious and sporadic labour in an era of neoliberalisation, deregulation and austerity. Further, as both Robert G. Hollands (2008, p. 309) and Antoine Picon (2015) note, the smart city model represents a continuation of the underlying imperative of the creative city – that is, to brand cities as cool, high-tech and fun places to live and work. The smart city – premised on the integration of smart sensors, big data, civic engagement tools and

real-time command and control dashboards into city planning and management (see Greenfield, 2013; Kitchin, 2014; Mattern, 2016; Townsend, 2013) – simply adds to the creative city-branding repertoire the layer of (projected) seamless technological efficiency and ubiquitous high-speed connectivity. As Picon (2015, p. 45) puts it, ‘art galleries, performance venues, gastronomic restaurants and fashion boutiques all pertain to the ecology that the knowledge economy requires, just as much as sensors, fibre optics and ubiquitous computing’.

In this sense, the creative city is part of a continuum that extends across the ongoing spatial reconfiguration of cities and their economies. This dates from at least the 1960s and the beginnings of contemporary globalisation and post-industrialisation; continues through the 1980s and the rise of the digital economy and urban renewal initiatives aimed at attracting the knowledge work necessary for post-industrial growth; and continues in today’s attempts to brand cities as smart and creative.

‘Be playful’: games, play and creative city policy

In previous research, I outlined how games and play figure into smart city strategies – both as drivers of economic growth in the city generally and as perceived ‘counters’ to the top-down, instrumental and technocentric smart city vision (Leorke, 2019). In this chapter, I focus more specifically on the creative city agenda and how games, play and playfulness more broadly contribute to its objectives. These are framed primarily in instrumental ways, reflecting what – to paraphrase McRobbie (2018) – might be described as the imperative for citizens and urban policymakers alike to ‘be playful’ as well as to ‘be creative’ in order to thrive in the new economy. My aim is to respond to this book’s original call for papers, which invited contributions that critically engaged with the role of games and play in urban economic policy and the imperative for cities to position themselves as creative, fun and playful.

Given this broad remit, in this chapter, I do not adopt an urban geography approach, detailing case studies of specific cities or attempting to map this process empirically. Instead, my approach is deliberately conceptual and wide ranging, with the intention of identifying approaches that scholars both inside and outside game studies might take to unpack the complex, diverse and perhaps even untraceable ways that games, play and playfulness figure into the economic strategies of cities. Rather than simply focusing on game production or game work as previous approaches have (see Kerr, 2017), I use the terms ‘games’, ‘play’ and ‘playfulness’ to cast a wide net and capture how these concepts contribute to the creative city agenda – even if this occurs indirectly and unacknowledged by policymakers and even practitioners themselves.

By ‘games’, I refer to the understanding of games as structured, rule-bound texts, artefacts and products; but also as ‘processual events’ that are dynamic, embodied, contextual and constantly evolving as they are played in multiple iterations and with different groups of people (Consalvo, 2009; Keogh, 2018; Malaby, 2007). This is particularly important in the urban context when moving beyond the

space of digital game production to consider games that occur in everyday, outdoor public spaces. Of the three concepts I discuss, games have the most concrete and measurable economic effect on the creative city. Digital and analogue games are sold in the marketplace and developed by companies that employ individuals, contributing revenue to the local economy through taxes and rates. Meanwhile, attendants at public outdoor game events can be surveyed to estimate how much their participation boosts the local economy through tourist spending (although in practice this is rarely done).

‘Play’ is much more diffuse and difficult to categorise, let alone determine its actual economic impact. Acknowledging the challenge around defining play, which by its nature is difficult if not impossible to distinguish from non-play (Stevens, 2017, p. 177), I draw on the work of Quentin Stevens and Miguel Sicart to understand play as an ‘interface’, ‘mode of engagement’ or frame for engaging with the environment around us (Sicart, 2016; Stevens, 2007, 2012, 2017). In the creative city context, this encompasses many aspects of ‘urban play’, including semi-organised large public gatherings like carnivals, festivals and street play initiatives and individual or small group-based practices like skateboarding, parkour, informal street games, outdoor chess tournaments, ‘zombie walks’ and other such temporary, fleeting interventions into urban space. While these activities can contribute to the creative city agenda – for instance, through tourism and boosting the city’s image in the media – they often do not. While some attempts have been made to ‘measure’ the economic impact of play on cities (see Carmona, 2018; Stokes et al., 2018; Swanson, n.d.), these are largely exploratory and small scale. As such, play is even more difficult to measure than it is to conceptualise.

The final term, ‘playfulness’, is almost impossible to measure and categorise. I define it here as an attitude or affective state of mind, a ‘lusory attitude’, as Bernard Suits (1978) puts it, and this is something that can appear anywhere and in almost any form. In terms of the creative city agenda, playfulness can be pinpointed to certain ‘moments’ and practices. For instance, citizens might conduct yarn bombing; decorate signs, bollards, neighbourhood book exchanges and other infrastructure; create playful murals or street art; or engage with other DIY urbanism projects that comment on or play with the spaces of the city. Meanwhile, ‘cities’ themselves might be playful, such as by releasing an ‘alternative history’ guide map, temporarily renaming its centre by punning on its original name or releasing an advertising campaign that pokes fun at its history or local stereotypes. These moments and practices can circulate through mainstream and social media, helping boost the city’s local image as playful and attracting visitors or attention. But their actual impact and contribution to the city’s broader agenda is minimal, if not nonexistent.

Having established this (rather ambitious and wide-ranging) scope, in what follows I outline three overarching ways that games, play and playfulness figure into the creative city agenda:

- 1 through their existence as a creative industry,
- 2 by promoting cities as playful and playable,
- 3 by playfully instilling citizens with a creative ethos.

These various roles occupied by games and play can all occur in other cities (and indeed also towns or villages) that have not branded themselves as creative cities or implemented creative city-inspired policies. But they are particularly prevalent in those cities that have embraced the creative city agenda. My aim is not to provide an exhaustive taxonomy or to identify a generalising trend, but rather to offer an illustrative framework that spurs further engagement with, responses to and critiques of this topic.

Through their existence as a creative industry

The creative industries remain incredibly difficult to categorise, with numerous competing and sometimes-conflicting definitions by academics and policymakers (see Hartley, 2005 and the discussion in the Introduction). While games sometimes fit into these definitions as part of the broader media, art and entertainment sector, as Aphra Kerr (2017, p. 6) notes, game production teams encompass both aesthetic/artistic labour and technical/software development. This makes them particularly difficult to categorise as an employment sector. Nonetheless, as games continue to grow in terms of revenue and simultaneously gain legitimacy as an artform (Parker, 2013), they have become one of the key creative industries that cities want to attract to their economies. In crude policy terms, gamemakers now represent a significant proportion of the creative class that cities need in order to remain agile and competitive. Furthermore, with the rise of the app economy and other digital distribution platforms that create the potential (if not the likelihood) for almost any creative person to design a global smash-hit game, start-ups and individual gamemakers are even more desirable in an era of ‘innovation’ and ‘digital disruption’.

For policymakers, this means investing in subsidies and tax breaks for developers; creating grants to fund independent games or ‘artgames’ (Parker, 2013); and funding the development of ‘hubs’, incubators and coworking spaces to attract gamemakers and support game development companies and independent start-ups. These strategies are generally successful at giving certain cities a competitive edge over others and fostering a local game development community. As Kerr (2017, ch. 5) points out, though, game production often resists the ‘clustering’ tendencies of other creative and cultural industries. Such policies can also overlook the wider range of ‘informal’ gamemaking practices identified, for instance, in Brendan Keogh’s work (see Keogh, 2019).

By promoting cities as playful and playable

Many cities want to be smart and creative, but increasingly, they want to be seen as playful and playable as well. This is the concept behind the Bristol-based Playable City organisation, which funds artistic interventions into cities around the world that aim to facilitate social interaction and temporarily transform everyday locales into spaces for play (Playable City, n.d.). Playable City rhetorically positions itself as a ‘counter’ to the top-down, technocentric vision of the smart city. But its projects nonetheless support (and are typically funded by) the creative

city policies of the cities they take place in, which seek to position their cities as creative, lively, progressive and playful places to live and work – which, as noted earlier, is the underpinning goal of the smart city itself.

Other initiatives similarly seek to attract residents and knowledge workers to the spaces of cities by invigorating public spaces and supporting cultural and leisure activities through play. City-funded or -sponsored game festivals, expos and conferences, museum exhibitions, interactive artworks and installations, location-based and augmented reality game projects and other outdoor public gaming events all contribute to this agenda either subtly or overtly. Some prominent representative examples include Games London, G-STAR in South Korea and Melbourne International Games Week; the touring *Game On* exhibition (Barbican, n.d.); the Victorian state government-funded augmented reality game *64 Ways of Being* (Creative Victoria, 2018); the Come Out & Play festivals in New York and San Francisco; and various city-organised initiatives that use location-based games – particularly *Pokémon GO* – and other contents tourism to ‘activate’ urban areas (see Ramírez-Moreno & Leorke, in this book; Stokes et al., 2018). All these examples make the everyday life of the cities they take place in playful in their own right. But they also help *promote* the city’s image to visitors, gamemakers and knowledge workers at the same time, effectively harnessing the creative labour of gamemakers, artists, cultural institutions and grassroots communities who create them (and who benefit in turn by receiving funding, publicity and recognition for their work).

By playfully instilling citizens with a creative ethos

This third category has the weakest direct connection to the creative city agenda and indeed has much stronger and more explicit ties to the smart city (see Leorke, 2019). Nonetheless, I argue that it also partly supports the underpinning logic of the creative city – to prepare citizens for the digital era and be creative – by adopting the discourse of play. The various city-funded tools for citizen engagement – such as gamification apps, civic games, participatory planning tools and hackathons – all embody this in two ways.

First, they signal that the city is open, participatory and playful: it is willing to experiment and embrace innovation, disruption and agile thinking. There is some overlap here with the previous category. But whereas the examples of festivals, exhibitions and urban activation initiatives described earlier are all *outsourced* to the city’s communities and institutions, the examples here are driven from *inside* the city’s government – typically the mayor’s department or a digital engagement office headed by a chief digital officer. They are part of a largely rhetorical strategy to demonstrate the city government’s willingness to be experimental and playful by adopting the qualities of play in its planning discourse and marketing. Michiel de Lange captures this rhetorical strategy when he notes, ‘innovations in “playing with the rules” and “leveling the playing field” include participatory budgeting, liquid politics, opening data repositories, and urban labs for semi-autonomous innovation’ (2015, p. 433).

Second, civic games and other related initiatives convey this rhetoric by inviting citizens to participate in the city's future planning and development, in the process conscripting them into narratives of creativity and innovation. Civic games, for instance, encourage citizen engagement and participation in the urban planning process by asking citizens for their input on urban planning decisions or asking them to take on the role of a planner or citizen to understand the urban policy process. Meanwhile, hackathons encourage citizens to play with the city's data sets, creating novel visualisations, tools and games out of them. While these various initiatives can be highly contrived and rarely translate into real-world urban policy or planning outcomes (see Gordon & Manosevitch, 2010), they nonetheless instil the creative ethos in citizens so essential to the creative city agenda. In the process, they help prepare citizens for a digital future characterised by digital-by-default government services, technological disruption and precarious labour – albeit delivered in the language of play and gamification. This is not to cynically dismiss such initiatives but rather to point out that they are inevitably entangled in this overarching agenda, which remains a central tenant of the creative city.

Directions for future research

This chapter highlights three ways that games, play and playfulness all figure into the creative city agenda. This is by no means definitive but is rather, as I noted at the outset, intended to spur further debate and provoke a broader set of questions around the instrumentalisation of games and play in urban policy and highlight potential 'counters' to this instrumentalisation. With this in mind, I conclude by identifying three areas that future research on this topic might explore and describe how the framework I develop here might evoke such discussions, challenges or criticisms:

- 1 How can case studies – of specific local or regional contexts, or comparisons of different cities – reveal the formal and informal (Keogh, 2019) ways that games and play are incorporated into creative city strategies? This involves a close analysis of policy documents and wider policy discourses that mention the funding of games and playful activities and developing a framework for understanding the language that policymakers use to characterise the cultural and economic contribution of games and play to their cities.
- 2 How can the actual economic impact of games and play on cities be measured, quantitatively and/or qualitatively? Given the complications involved in pinpointing these terms (Malaby, 2007; Stevens, 2017) – and the tendency by scholars and policymakers to focus on only statistically categorised game production or workers – there is a growing need to find ways to expand the focus of research to consider the far-more-diffuse and far-more-disparate economic impacts that games and play generate. This inevitably means sacrificing precision and adopting exploratory and approximate methods for measuring this impact. But in the process, this opens up avenues for

understanding the far-more-complex and far-more-nuanced way that games and play contribute to urban life.

- 3 How can games and play resist becoming an ‘expedient’ (Yúdice, 2003; c.f. McRobbie, 2018) in the creative city by challenging neoliberalism’s inherent instrumentalisation of culture, creativity and play? This is without doubt the most complex question of all, since it involves questioning the tendency for top-down government policy to assimilate the language of play and creativity into its strategies and in the process resist attempts to defy or challenge this assimilation from the outside. All three of the categories I outlined earlier include examples that instrumentally *serve* the creative city agenda, even if this is not their primary intention (or, indeed, not their attention at all). But framing any of them as opposed to or critical of the creative city agenda is complicated by the mutually beneficial relationship between gamemakers and policymakers that underpins their creation, as I’ve argued elsewhere (Leorke, 2018, ch. 5).

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3 Promoting Yokosuka through videogame tourism

The *Shenmue* Sacred Spot Guide Map

Carlos Ramírez-Moreno and Dale Leorke

Introduction

There is a growing body of academic literature on cultural tourism, especially focusing on instances where organisations across different levels of government have capitalised on the incorporation of a real-world location into a film, television show, novel or other form of popular culture. From mainstream franchises like *The Lord of the Rings* and *Harry Potter*, to series with dedicated fanbases like *Twin Peaks* and *Wallander*, these initiatives have been analysed as examples of ‘media-induced tourism’ (see, e.g., Busby & Klug, 2001; Gjorgievski & Trpkova, 2012), ‘contents tourism’ (Seaton et al., 2017) and ‘media pilgrimages’ (see, e.g., Imai, 2005; Norris, 2013), among other concepts. Yet videogames remain largely overlooked in this field of research. In game studies and in media and cultural studies, scholars have investigated how the representation of real-world locations in series like *Assassin’s Creed* and *Grand Theft Auto* compare with their fictional counterparts, through detailed comparisons of the physical and digital spaces (see Miller, 2008). But to date, apart from a handful of exceptions (Dubois & Gibbs, 2018; Jaworowicz-Zimny, 2020; Sugawa-Shimada, 2015; Yamamura, 2018), few scholars have explored how this representation might carry over into the tourism campaigns and economic strategies of locales that appear in videogames.

This chapter addresses this gap through the case study of Yokosuka in Japan, which has recognised the cult classic videogame series *Shenmue* as a drawcard for tourists and fans from outside the city to visit its spaces. Through its *Shenmue* Sacred Spot Guide Map, Yokosuka officials provide a detailed guide for tourists seeking to visit locations depicted in the game. It contrasts with their fictional and real-world counterparts and invites visitors to explore the city through events and promotion campaigns tied to the map. Drawing on an analysis of the guide map, an interview with its creators and field observation in Yokosuka itself, we examine the potential for videogame pilgrimages to put cities otherwise overlooked in travel guides and reviews figuratively on the map and to boost their local economy. The chapter begins with an overview on the literature on popular culture-driven tourism, focusing particularly on contents tourism, which is of particular relevance to the Japanese context. The second part then outlines the *Shenmue* Sacred Spot Guide Map campaign, concentrating on the specific policy settings of

Yokosuka and the growing role that contents tourism campaigns centred on popular anime and game franchises have come to play in its economic development. The final part then analyses three aspects of the guide map: the map's development; the promotion campaigns surrounding it; and its measurable impact, drawing on fieldwork research. The chapter concludes by reflecting on the *Shenmue* Sacred Spot Guide Map as an example of 'complex contents tourism' (Seaton et al., 2017). We argue that it carries valuable lessons for policymakers about incorporating videogames into local tourism initiatives, but its impact remains difficult to measure and replicate elsewhere because of the specific circumstances surrounding its creation and the franchise on which it is based.

Incorporating videogames into tourism scholarship

Government agencies at every level (local, state, regional, national and so forth) have long recognised the potential for media and popular culture texts that feature their localities to attract fans and tourists. Perhaps most famously, the national government-funded body Tourism New Zealand successfully capitalised on the success of *The Lord of the Rings* film trilogy to promote New Zealand, where the films were shot, as a tourist destination to travellers around the world. The campaign involved television and cinema spots, print advertisements, paid news features and media appearances from the film's cast, crew and New Zealand politicians. It culminated in the launch of the 100% Middle-earth, 100% Pure New Zealand campaign in 2012 (see Arnold, 2003; Jones & Smith, 2005; Tourism New Zealand, 2013). Another example is the Seattle city government's official tourism website Visit Seattle, which has a dedicated webpage listing locales and businesses that feature in the television series *Twin Peaks* (Visit Seattle, n.d.). The Swedish town of Ystad has developed a detailed interactive map called In the Footsteps of Wallander, with information about 65 locations in and around the town that feature in the *Wallander* books and television series (Ystads kommun, n.d.). And the Brontë Society in Haworth, UK, runs the Brontë Parsonage Museum, providing VIP tours and offering information to visitors about the locations where the infamous Brontë sisters lived (Bronte Parsonage Museum, n.d.).

Philip Seaton et al. (2017) note that Japan has been particularly successful at embracing its popular culture – including film, novels, anime, manga, music and videogames – to attract international fans to its shores. Following the Cool Japan campaign that originated in the early 2000s, the Japanese government began to recognise the potential for tourism induced by popular culture as a key strategy for boosting its local tourism industry. This strategy has unfolded under the umbrella of 'contents tourism' (*kontentsu tsūrizumu*) and been taken up across numerous levels of government and across both the public and private sectors in the country. Takayoshi Yamamura, building on Seaton et al. (2017), defines contents tourism as

a dynamic series of tourism practices/experiences motivated by contents (defined . . . as 'information – such as narratives, characters, locations, and

other creative elements – that has been produced and edited in popular culture forms and that brings enjoyment when it is consumed'). Contents tourists access and embody 'narrative worlds' that are evolving through 'contentsization', namely the continual process of the development and expansion of the 'narrative world' through both mediatized adaptation and tourism practice.

(Yamamura, 2020, p. 13)

Contents tourism thus differs from other forms of tourism mainly in that the traveller's motivation for visiting the site is driven by a connection to a particular popular culture phenomenon, rather than the distinct features of the site itself (such as its architecture, heritage value or geographic features) – although the locations they visit may also have these features. The traveller's motivation might be as specific as wanting to experience a location depicted in a film or as vague as wanting to experience the atmosphere of their favourite manga series.

Contents tourism, according to Seaton and Yamamura, is not a fleeting, small-scale initiative but a central strategy in the economic development of Japan that emerged out of a period of economic stagnation and population decline. The early 2000s, they note, marked 'a crucial shift away from the focus on manufacturing that had characterized the economic miracle in the second half of the twentieth century and placed the focus on Japan's creative industries' (Seaton & Yamamura, 2015, p. 5). Following an ambitious plan to attract 10 million international tourists a year to Japan by 2010,

the focus of national branding began the shift from traditional culture to a blend of traditional and pop culture . . . contents tourism [is now] a cornerstone of Japan's economic plans for the coming decade and it is hoped by the government that [it] will generate massive additional revenues for Japan. The government has gone beyond thinking of contents as an export business, but rather now considers contents to be the first stage of a national strategy that invites tourists to visit Japan as the site where those contents originated.

(Seaton & Yamamura, 2015, pp. 5–7)

Some contemporary examples of successful contents tourism campaigns in Japan include Capcom's partnerships with cities and corporations connected to its videogame *Sengoku Basara*; the Sanrio Puroland theme park in Tama, Tokyo, which regularly attracts fans of *Hello Kitty*; and Chōfu, Tokyo, which brands itself as the 'town of film' and allows self-guided tours around its film studios (see Seaton et al., 2017, pp. 34–35, 85–87, 147). Contents tourism as both a policy agenda and object of study remains centred on Japan, given that the term itself is a Japanese invention. But Seaton et al. point out that there are many examples of contents tourism in other countries as well, although they may be articulated via different concepts (2017, p. 8; see also Yamamura, 2020).

All the examples we have outlined so far involve government agencies at different levels officially supporting a tourism campaign through funding or resources, whether as their own initiative or in partnership with a content owner. Of course,

there are also many examples where local small businesses, independent institutions and entrepreneurs have appropriated or taken advantage of popular culture texts that have a connection to their location in order to promote themselves. Guided tours, walks, themed cafés and in-store products and promotions often fit into this category (see, e.g., Norris, 2013). In addition, fans may embark on their own ‘pilgrimages’ to cities, towns, sites, buildings or landmarks featured in popular culture texts of their own accord, with only informal, fan-made guides rather than any officially sanctioned products or services informing their visit (see, e.g., Lombardi, 2018). Our case study of *Shenmue* itself started as a fan initiative, with examples from as early as that of Rodger Swan (Rodgerswan, 2008), one of the first YouTubers to share some of the iconic locations that would later appear on the *Shenmue* Sacred Spot Guide Map.

For the purposes of this chapter, however, we have chosen to focus our discussion specifically on contents tourism – that is, tourism motivated by the association of a popular culture text with one or more locations (Seaton et al., 2017, p. 4) – that has been supported by a government agency in some way. This is because this type of tourism most closely relates to our case study of the *Shenmue* Sacred Spot Guide Map. The case study fits this description, as we shall outline next, and it is also situated in the Japanese city of Yokosuka, where contents tourism has been a key strategy of the city at the municipal level. Our narrower focus makes sense given this connection with the Japanese context and the broader history of contents tourism in Japan. However, contents tourism is a branch of cultural tourism (Seaton & Yamamura, 2015, p. 4) and shares traits with other types of cultural tourism – for instance, media tourism, film-induced tourism and literary tourism (see Beeton, 2005; Busby & Klug, 2001; Reijnders, 2011; Watson, 2006). Contents tourism also shares many similarities with the ‘media pilgrimage’, in which fans embark on a ‘pilgrimage’ to the ‘sacred sites’ of their favourite popular culture texts (see Couldry, 2000, 2007; Norris, 2013). While contents tourism remains a related but more specialised approach to these types, we nonetheless incorporate discussions from these fields where relevant. We also acknowledge the elusiveness of the term ‘contents tourism’, which as Seaton et al. note (2017, pp. 3–6, 36) can often involve numerous actors, patterns and motivations that can be difficult to differentiate from other types of tourism.

There is now a growing body of literature on contents tourism, with numerous journals and publications devoted to its study (see in particular the *International Journal of Contents Tourism* and Seaton & Yamamura, 2015, Yamamura & Seaton, 2020). Similarly, research on the aforementioned other forms of cultural tourism is growing. But the role of videogames in tourism initiatives remains underdeveloped, even though ‘computer games’ are specifically included in Seaton et al.’s (2017, p. 3) original definition of contents tourism. In contents tourism literature, apart from the example of *Sengoku Basara* (see Seaton et al., 2017, pp. 34–35; Sugawa-Shimada, 2015; Yamamura, 2018), there are only a handful of case studies on videogames. Most notably, Aleksandra Jaworowicz-Zimny (2020) discusses *The Witcher* series tourism in Poland, focusing primarily on the live-action role play (LARP) *Witcher School*. Through a survey of participants,

Jaworowicz-Zimny found that LARP encouraged some participants to spend more time in Poland than they would otherwise, although this was expressed only through intention. But because *The Witcher* series is only inspired by the Polish landscape rather than set in any specific real-world locales, some participants questioned its connection to the game. Further, all *The Witcher* tourism events mentioned are organised by fans, companies and entrepreneurs, with little recognition from municipalities about *The Witcher*'s tourism potential to date (Jaworowicz-Zimny, 2020).

Outside the field of contents tourism, scholars have likewise seldom examined how game texts are or might be used by businesses and organisations to attract fans to the locations they depict. One exception is the work of Louis-Etienne Dubois and Chris Gibbs (2018), which examines a small sample of online comments from players of the videogames *Assassin's Creed II* (2009) and *Assassin's Creed Unity* (2014) – set in Italy and Paris, respectively – who visited the real-world locations depicted in the game. They outline three main types of what they call videogame-induced tourists. These include serendipitous tourists, who visit a destination portrayed in the game by coincidence; general tourists, who are drawn to a specific location not because it is included in a game but who engage in game-related activities while there; and specific videogame-induced tourists, who travel to a destination primarily because it is featured in a game. Dubois and Gibbs identify various ways businesses and government organisations might capitalise on these types of tourists, such as themed events or guides about locations and historical figures featured in the games (2018, p. 194). But their chosen game examples are set in cities like Florence and Paris, which already attract large volumes of tourists, overlooking smaller destinations that might be able to more effectively capitalise on a niche audience of videogame fans to attract visitors (2018, p. 195).

In game studies, there are numerous analyses of videogame texts that compare and contrast virtual representations of cities and other locations in games like the *Assassin's Creed* and *Grand Theft Auto* series with the real-world environments they depict (see, e.g., Golding, 2014; Hakimi, 2016; Miller, 2008, 2012; Schweizer, 2014). But these discussions focus on how real-world physical locations are represented in the videogame text rather than on how this representation might have implications for the locations depicted themselves. This chapter helps fill this gap in the scholarly literature through the case study of the *Shenmue* Sacred Spot Guide Map, a unique example of contents tourism in the city of Yokosuka, Japan, that highlights the challenges and opportunities of videogame-driven contents tourism for less-frequented tourist destinations.

The *Shenmue* Sacred Spot Guide Map

Shenmue is a role-playing and adventure videogame series. Created and directed by a pioneer of arcade gaming and 3D graphics, Yu Suzuki, the first game was released in 1999 for Dreamcast and published by Sega. A sequel was first launched in 2001 for Dreamcast, only in Japan and in the European territory, and then in 2002 for Xbox, aimed at the North American market, France and the United Kingdom.

Remastered editions of both games in the series were released in 2018 as *Shenmue I & II* for PlayStation 4, Xbox One and PC. Finally, a long-awaited sequel, *Shenmue III*, was released in 2019 after a successful crowdfunding campaign. It was developed by Yu Suzuki's own company Ys Net and published by Deep Silver. Although the first game sold well, its high development costs – between US\$47 and US\$70 million (Sheffield, 2011) – and the declining sales of the Dreamcast meant that the game did not recoup its production costs. Nonetheless, as one of several innovative games developed during a period of experimentation in the Dreamcast's final days (see Montfort & Consalvo, 2012), the game acquired a cult status (Jones, 2016; Bailey, 2018).

Set in 1986, the first *Shenmue* is a story of mourning and revenge told with the grandiloquence of a martial arts B-movie and the relaxed pace and intimate gaze of a Yasujirō Ozu *costumbrista* drama. This is possible partly due to the combination of the continuous passage of time and the pseudo-agency of the nonplayable characters, which creates 'a clockwork world that, once powered up, will play itself' (Holmes, 2012, p. 114). As both Alexander Galloway (2006) and Dylan Holmes (2012) note, by casting the player as a participant in something larger than themselves, *Shenmue* made the player experience both humbling and personal. The player assumes the role of Ryo Hazuki, a young karate practitioner who embarks on a quest to avenge his father's death, killed in front of him by a Chinese martial arts master known as Lan Di. *Shenmue* has been praised for being 'a pioneer of the hyperrealistic urban game environment' (Schwartz, 2006, p. 314), for the deep characterisation of both its protagonist and nonplayable characters (Fencott, 2003), and for the attention to detail of its cozy, charming open world. This includes the ability to interact with almost every character and object in the game, a design approach referred to as full reactive eyes entertainment (FREE). This 'FREEdom' extends from the ability to converse with over hundreds of nonplayable residents following their daily routine (whose lives are extensively mapped, even down to their individual blood type) to opening any drawer and inspecting almost any item by hand (Reeves, 2019). But primarily the game is notable for the extreme delicacy with which it portrayed mundane aspects of Japanese culture of the late 1980s (see Méndez & Ramírez, 2015; Wood, 2018; Hutchinson, 2019).

Yokosuka is not an image that first comes to mind when one thinks of Japan's representation in popular culture. *Shenmue*'s Yokosuka is a port city seemingly in decline. The game's main hub area of Dobuita is home to a number of thriving businesses, but these are interspersed with shuttered storefronts. At night, drunken salary workers stagger home, gangs operate in alleyways and US sailors from the nearby US military base search for their evening's entertainment. Life in *Shenmue*'s Yokosuka is sunk into the most absolute routine. This reflects the game's coming-of-age story, which centres on its protagonist's quest to break away from his place of origin and pursue a fate that leads him outside Japan and (in the most recent game) deep into rural China. There is also, however, a certain nostalgic tenderness in this slow-paced perception of everyday life, where boom-boxes, arcade machines of pre-3D-era games (designed by Yu Suzuki himself)

like *Hang-on* and *After Burner* and video karaoke machines represent the pinnacle of progress.

As Rachael Hutchinson (2019, p. 42) writes,

the designers of *Shenmue* led the global games industry in recreating real-world environments in the game space, using the streets of Yokosuka as not just their inspiration but their model for surprisingly accurate renderings of the suburb as the setting for the game's action.

Before *Shenmue*, 3D representations of real-life locations were still an emerging field in the videogame industry. Game settings often tended towards the fantastic: possible worlds without clear references in the actual world. Although every work of fiction is based to some extent on a wide variety of elements, like characters, locations and events taken from the real world, Yokosuka is one of the first attempts by a videogame company to offer an almost touristic experience of a virtual environment that is recognisable by those who inhabit and know it in the real world.

The first *Shenmue* is set entirely in a fictionalised version of Yokosuka near the end of the Shōwa era (1926–1989), which marked the twilight of Japan's economic boom. The game recreates numerous locales from the city, including its main street, Dobuita; surrounding areas like the Nagaura port warehouses; the residential area of Sakuragaoka; and Route 16, the main highway leading into the city. The in-game locations of Dobuita and Sakuragaoka retain their real-world names, although their geography and specific locations like buildings and streets differ from their real-world counterparts.¹

The real-world Yokosuka is located in the Kanagawa Prefecture of the Kantō region of Japan. It is approximately 50 km south of the centre of Tokyo, which is Japan's largest city, with a metropolitan population of 13.5 million (2015 census). Yokosuka's estimated population in 2020 is 390,000, and like many Japanese cities, it has been consistently experiencing population decline over the past two decades (see City of Yokosuka, n.d.; Japan for Sustainability, 2015). Yokosuka is renowned for its port activity, for the presence of the United States Fleet Activities Yokosuka, one of the largest US military bases in the country, and for being home to the Oppama industrial plant, where Nissan factories employ thousands of residents. Historically, Yokosuka is remembered as the area where US Commodore Matthew C. Perry docked his ships in 1853 to initiate diplomatic relations with the Tokugawa shogunate. Its main tourist attractions include the Mikasa Park, with its memorial warship and its statue of Marshal-Admiral Tōgō Heihachirō; Sarushima Island, the only natural island in Tokyo Bay; the Yokosuka Art Museum; and an annual curry festival celebrating the city's famous navy curry dish.

Yokosuka's population is declining as part of a broader process in Japan of 'regional shrinkage' (see Matanle et al., 2011). This process is driven by a combination of the country's overall population decline due to low birth rates and the growing concentration of the country's remaining population in its three major cities: Tokyo–Yokohama (which together form the most populated continuous

urban area in the world, with 38 million inhabitants), Osaka and Nagoya. As the overall Japanese population shrinks and residents relocate to these cities, smaller municipalities diminish more rapidly relative to the country's overall depopulation rate. Yokosuka, situated a mere 30 km from Tokyo–Yokohama, must compete with this nearby megalopolis to attract tourists and economic investment outside of its key manufacturing industries and military facilities.

In this context, the City of Yokosuka's Culture, Sports, and Tourism Division has invested heavily in contents tourism since the mid 2010s as a way to draw tourists from these large urban centres to its spaces and reinvigorate its economy. Some of these initiatives, promoted under the broad banner of subculture, have centred on anime and manga. These include events in collaboration with the creators of anime series set partly or wholly in Yokosuka, such as *Tamayura*, *Arpeggio of Blue Steel* and *High School Fleet* – as well as exhibitions (hosted inside the Mikasa warship museum) of works by Yokosuka-born artists Nobuyuki Fukumoto and Kazutaka Miyatake (see Gundam, 2015; Sugawa-Shimada, 2018; Yokosuka Travel Guide, 2016a, 2016b, 2017). But many of these subculture-focused contents tourism initiatives have also involved videogame franchises, including location-based mobile games.

This videogame-focused contents tourism began in 2014, when the Culture, Sports and Tourism Division approached Niantic, the developer of the location-based augmented reality game *Ingress*, to host a series of Mission Day events that involve completing tasks at famous landmarks across the city (Ingress Mission Day Yokosuka, 2015). Throughout 2016, following the release of Niantic's *Pokémon GO*, the city then sponsored a number of *Pokémon GO* promotions aimed at attracting visitors to tourist spots around the city (see Yokosuka Travel Guide, 2016c, 2016d, 2016e). These initiatives culminated in the City of Yokosuka's hosting Niantic's *Pokémon GO* Safari Zone event in 2018, winning the event over its neighbour Yokohama, which hosted the event last year. After complaints of overcrowding and congestion during the Yokohama event, Yokosuka was reportedly able to deliver a smaller-scale and better-managed experience (see Hanaway, 2018) – literally realising the city's strategy of drawing tourists away from its larger and more commonly frequented neighbours.

In addition to these location-based game events and promotions, the City of Yokosuka has held events and exhibitions for the videogames *World of Warships* and *Azur Lane*, including an exhibition and promotion campaign celebrating a crossover between the two series (Nelva, 2019; Yokosuka Travel Guide, 2016c). But perhaps the most unique example of the city's contents tourism strategy is its collaboration with *Shenmue*'s original publisher, Sega, to develop the *Shenmue* Chapter One: Yokosuka – Sacred Spot Guide Map (hereafter shortened to *Shenmue* Sacred Spot Guide Map or guide map), a pamphlet that highlights various places of interest from the Yokosuka townscape of the late 1980s that *Shenmue* is set in. The guide was first published in December 2017 by the city's Tourism Planning Division and made available for free in English and Japanese versions at the City Hall Information Centre and various retail outlets. An updated version was published in 2018, to commemorate the release of the *Shenmue I & II* HD

remastered edition. This edition includes minor revisions to the text and features in-game images from the remastered version of *Shenmue* (see Figure 3.1).

The pamphlet combines key text and information about the game with useful information on the main tourist spots of the town, dedicating considerable space to Dobuita Street. When opening the pamphlet, the reader finds a beautifully illustrated display of information about Yokosuka and its main shopping street. The main centrefold displays a map of the coast of Yokosuka: from the port of Nagaura, a place that inspired the port location of *Shenmue*, to Midorigaoka, a residential area close to Dobuita Street that evokes the adjacent in-game neighbourhoods of Sakuragaoka and Yamanose. It also includes the highway, Route 16, which features in a game sequence where Ryo must speed along the highway on his motorcycle to rescue his love interest of sorts, Nozomi. Left of this map is a slightly larger, zoomed-in map of the city centre, which depicts locales in and around Dobuita Street from the game, along with the names of their real-world counterparts. Below these two maps, occupying the bottom half of the pamphlet, are boxes of information about highlighted locations on the map and a collection of archive photos of the real-world Yokosuka taken in the 1980s (see Figure 3.2).

In the remainder of this chapter, we examine the *Shenmue* Sacred Spot Guide Map and its potential to attract fans of the *Shenmue* series to Yokosuka against

Figure 3.1 (Left) The 2017 English version of the guide map; (right) the 2018 Japanese version.

Source: photographs by Dale Leorke; guide map copyright 2017–2018 Sega/City of Yokosuka, used with permission

Figure 3.2 Screen capture of the inside of the guide map 2017 English edition.
Source: Copyright 2017–2018 Sega/City of Yokosuka, used with permission

the backdrop of the city's broader contents tourism strategy aimed at countering its economic and population decline. This analysis is informed by the respective experience of its two coauthors. Ramírez-Moreno brings a deep knowledge of the *Shenmue* series, having written a book about it (see Méndez & Ramírez, 2015) and closely analysed the game and accompanying guide map. Meanwhile, Leorke travelled to Yokosuka itself on 14 and 15 August 2019 to conduct original fieldwork for this chapter. This fieldwork involved visiting several locations listed on the guide map and interviewing its creators: Eriko Oyamada and Sae Sato.² The trip was organised with the invaluable assistance of two Japanese researchers, Dr Ema Tanaka and Prof. Yuhsuke Koyama, both of whom joined the interview and fieldwork.

The interview was conducted on 15 August 2019 at the City of Yokosuka offices in both English and Japanese, using consecutive interpreting.³ It was recorded and transcribed into both English and Japanese by a professional transcriber fluent in both languages, and the transcript was provided to all present to verify its accuracy. Before the interview, Leorke, Dr Tanaka and Prof. Koyama also visited various locations that either feature in *Shenmue* or were recommended as tourist destinations on the guide map. During this fieldwork, they also conducted short informal interviews with three owners of the businesses that are listed on the guide map as influences for locations in the *Shenmue* game. These interviews were conducted in Japanese and translated on the spot into English by Dr Tanaka. This fieldwork lasted approximately 4.5 hours. (As we note in the acknowledgements, we owe a great debt to Dr Tanaka in particular for planning this fieldwork and acting as liaison and interpreter for the interview.) The evening before, Leorke also visited Dobuita Street alone. In *Shenmue*, the game's day–night cycle presents contrasting sides of Dobuita. By day, it is primarily a retail area for local residents. At night, the game emphasises its 'seedier' side, as a destination for US sailors to drink and gamble. Thus, it was important to visit the area during both daytime and nighttime to experience this contrast in reality.

In the following sections, passages that appear in italics are written by Leorke in the first person, adapted from his notes taken during the fieldwork in the city on both days. These observations and fieldwork notes were also informed by Leorke's experience with the *Shenmue* game, having completed it before visiting Yokosuka. Leorke acknowledges, however, that as a white Australian-born non-Japanese-speaking Westerner who spent only a relatively short time in the city – part of which was guided by Japanese colleagues from outside the city – these observations must be read with the limitations of this perspective in mind.

'Follow Ryo Hazuki's journey through the streets of Yokosuka'

I arrive at JR Yokosuka-Chuo station in the early evening and head to Dobuita Street, only a short walk from my hotel, at around 9pm. At night, without the guide map in hand and feeling the self-consciousness of both a white Westerner in Japan and a tourist exploring an unfamiliar location in a

foreign country, I struggle to make the connection between the streets before me and the night-time Dobuita of Shenmue familiar to me from my time spent with the game. Perhaps the most immediate connection between the two is the presence of US military personnel, who stand out due to their army uniforms and boisterous conversation. Some military personnel gather in small groups in front of the bars discussing their plans for the evening and greeting colleagues passing by, while others yell excitedly from inside bars or down the road. Although no specific locales from the game grab my attention, the winding street densely packed with store fronts, vending machines, apartment buildings and bars evokes the world of Shenmue, even as it could also stand in for almost any Japanese inner-city street – apart from the presence of US military personnel and more prevalent English signage.

(Leorke fieldnotes, 14 August 2019)

Mapping the ‘sacred spots’ of Shenmue’s Yokosuka

The *Shenmue* Sacred Spot Guide Map was conceived of and developed by Eriko Oyamada, a web designer in Yokosuka’s Tourism Division who has drawn on her strong interest in games to successfully advocate for the city’s recognition of gaming culture. She initiated the city’s collaboration with Niantic on its *Ingress* and *Pokémon GO* events by approaching Niantic’s office in Roppongi, Tokyo, and by creating a spot guide for *Pokémon GO*. She explains that the former mayor of Yokosuka is a fan of the original *Shenmue*, and after a conversation with him, they agreed to develop something to promote the city’s connection with the game. In 2015, *Shenmue*’s creator, Yu Suzuki, announced the aforementioned Kickstarter crowdfunding campaign for *Shenmue III*. This provided an impetus for the project, and Ms Oyamada contacted Sega for approval and began scouting locations to feature on the map with graphic designer Sae Sato throughout 2017 (City of Yokosuka interview, 15 August 2019; see also AniKaneda, 2018; Phantom River Stone, 2017).

The project was a partnership with Sega, who licensed the franchise rights and contributed some material to the final version, but the map itself was designed almost entirely by Ms Oyamada and Ms Sato. They describe a painstaking process of photographing locations around the city and comparing them with the virtual game environment to ensure they matched up (see Figure 3.3). Ms Oyamada explains that ‘it took a lot of effort and many, many screenshots to get the right angle to help reflect the same image taken in the real-life location in Yokosuka’ (City of Yokosuka interview, 15 August 2019). These detailed screenshots were not provided by Sega, and this process took place before the *Shenmue I & II* HD remastered edition was released on contemporary game platforms, like the PS4, that include built-in screen capture tools. To capture these screenshots, they had to play the game on Dreamcast, which lacks such features and also does not include the ability to save and continue playing anywhere in the game, making it much more laborious. In this sense, although the initiative was sanctioned and supported from above by both the City of Yokosuka and Sega, its creation was a

Figure 3.3 Detail of the guide map 2017 English version showing real-world vs in-game locations.

Source: Copyright 2017–2018 Sega/City of Yokosuka, used with permission

‘fan’ project of sorts in itself – initiated and almost entirely undertaken by two city employees in their own time, fuelled by their own passion for the game rather than by financial gain.

For the locations depicted on the map, the level of similitude between the in-game and real-world counterparts varies. For some, the resemblance is clear: Hanamatsu, a historical florist established in 1933, is reminiscent of a flower shop owned by Aida, the grandmother of one of the game’s recurring characters, Nozomi. Likewise, Kakita, a military shop established in the postwar era, immediately recalls Kurita Military Surplus, the in-game store run by Kurita-san; while MIKASA vol.2, established in 1952 and originally devoted to selling *sukajan* (souvenir jackets) to US military personnel, resembles the Water Dragon vol.2 store. In other cases, the similarities are less obvious or have diminished over time, so the creative team had to locate comparable locations in the current Yokosuka. One particular challenge was selecting locations representing the in-game neighbourhoods of Sakuragaoka and Yamanose, which players regularly visit throughout the game. As the guide map states,

While it is difficult to pinpoint and introduce a specific part of the Sakuragaoka~Yamanose residential area, there are many streets and shrines similar to in-game locations around Dobuita Street still remaining in the present. As you walk around town and ponder thoughts about the game, you may find some unexpected locations that will bring back familiar memories. The Odakicho Park is especially steeped in the Yamanose ambiance.

(*Shenmue* Sacred Spot Guide Map 2017 edition text)

This varying degree of familiarity and dissonance between the in-game and real-world locales was evident in Leorke’s own fieldnotes. As the fieldwork notes quoted at the beginning of this section demonstrate, the most immediately recognisable connection is the presence of US military personnel and the features of the urban landscape to accommodate them. This includes far more English signage than in other Japanese cities, such as street signs in English and signs warning US military personnel not to enter sacred sites like shrines or temples. Other locations, like the warehouse district and Suwada Shrine (represented in-game as Yamanose Shrine), have a more tenuous connection to the game environment. The warehouses are not accessible to members of the public and can be viewed only from a distance across the harbour at the site of a dismantled crane. This is the first site that Leorke and his Japanese colleagues visit, taking a taxi from JR Yokosuka station along Route 16 – the same path that Ryo rides on his motorcycle to rescue Nozomi.

Dr Tanaka provides directions to the taxi driver, a serious and softly spoken man perhaps in his late 60s, showing him the recommended path outlined on the guide map. As we drive to the warehouse area, the driver mentions that many US military personnel who used to spend their weekend recreation time in Yokosuka now travel to Yokohama or Roppongi [a district in Tokyo

popular with foreigners], reinforcing the city's economic decline. The driver notes that not many of his passengers ask to be taken to the warehouse district since it isn't accessible to the public. We arrive at the warehouse and park at a largely abandoned dirt area with a dilapidated building nearby. Apart from two workers at the building, who must wonder what we are doing there, no one else is around. The driver waits in the car while we take photos and take in the harbour view. As we do so, I feel a bit like a naïve tourist, visiting a completely mundane place and assigning it a significance that nobody else there shares. I take photos and try to invoke Shenmue's bustling docks in mind, but this feels like a dead zone that has little if any connection with the game.

(Leorke fieldnotes, 15 August 2019)

Because Yokosuka's role as a manufacturing and port hub has been diminishing since the 1980s, the port area has changed, with the site of the former crane now abandoned and the port's size visibly reduced from its glory days. Other locations have changed even since the guide map was produced:

When we attempt to visit SOFLAKI on Dobuita Street – a food truck selling Greek food that the guide map describes as 'reminiscent' of Tom's Hot Dogs from Shenmue – in its place is a 'Crazy Burritos' stand. We approach the owner and ask if SOFLAKI still exists, and he explains that it burned down several years ago (no one was injured or killed) and the shop owner has opened a new, permanent burger store down the road called Arabella. When we go there, we speak to the owner – a middle-aged woman with short, buzzcut hair and a very bubbly personality – who has never heard of the game or her former store's incorporation into it before. We had planned to lunch at Honey Bee's around the corner (the inspiration for Shenmue's Funny Bear BURGER). But when we see a massive queue to get a table at Honey Bee's, we accept her invitation to eat at her restaurant and hand her a Japanese version of the guide map. Now perhaps she can read about her store's strange, convoluted connection to the game.

(Leorke fieldnotes, 15 August 2019)

Promoting Yokosuka's local economy through the guide map

The initial print run of the map included 10,000 copies in Japanese and English, with approximately half of these distributed to the US naval base at Yokosuka. As Ms Oyamada explains, this was a strategy used by the City's International Relations Division to engage US military personnel – many of whom are 'relatively young and . . . interested in the *Shenmue* game' – to help promote the map to their US and international friends and relatives who may visit Yokosuka (City of Yokosuka interview, 15 August 2019). In addition to the physical guide map pamphlet, the Tourism Division has hosted a number of events and promotion campaigns to raise awareness of the guide map and the city's connection to *Shenmue*. These were

Figure 3.4 Dobuita Street, Yokosuka.

Source: photograph by Dale Leorke

particularly tied to the release of the *Shenmue I & II* HD remastered versions in 2018. The updated version of the pamphlet featuring images from the remastered edition was distributed at Sega's booth at the Tokyo Game Show in 2018, and in December that year, the city also organised a *Shenmue* fan meeting at a live music bar in Yokosuka. The event, co-organised with IGN Japan, included 120 attendees randomly chosen from those who preregistered and featured onstage guests, such as Masaya Matsukaze, the Japanese voice and motion-capture actor for Ryo

Hazuki, and Eigo Kasahara and Hiroshi Noguchi, the planning director and motion camera and animation coordinator respectively, of the original *Shenmue*. Other guests came directly from Yokosuka, such as the owner of Kakita which inspired the game's Kurita Military Surplus store (see Phantom River Stone, 2018).

Between December 2018 and February 2019, the city also ran a campaign to encourage tourists to complete the route of shrines, parks and stores featured in *Shenmue*. The city placed several *Shenmue*-themed stands around Dobuita and distributed a series of original drink coasters featuring character artwork from the game to several of the shops featured on the guide map. Each

Figure 3.5 MIKASA vol.2 store, Dobuita Street, Yokosuka.

Source: photograph by Dale Leorke

visitor who spent at least ¥500 in those stores received one of the coasters as a gift. Ms Oyamada says that ‘according to the stores who were participating, about half the coasters were received by foreigners that were living in Japan. So it was very well received by people from abroad as well, not just Japanese customers’. She also claims that immediately following the guide map’s publication, ‘there was a lot of people, especially foreigners, that were walking around Dobuita street with the guide map’ and posing for photographs in parks (City of Yokosuka interview, 15 August 2019).

Her claims align with the informal interviews that Leorke and his colleagues conducted with shop owners. They spoke to the owner of Kakita, the military-themed clothing store; the owner explained that although not many *Shenmue* pilgrims had visited recently during the promotion campaign, there were large numbers. He mentioned the store was given posters of the game to sell, which have now all sold out. Similarly, the owners of MIKASA vol.2 also stated that most *Shenmue* fan visits occurred during the campaign and that during it many foreign residents brought their friends from outside the city. As noted earlier, the owner of the former SOFLAKI store had not heard of the game, but this is likely due to its tenuous connection.

Contents tourism can also bring negative consequences, such as visitors flocking to previously quiet neighbourhoods because of their historical or cultural features and disrespecting local customs. Inappropriate and insensitive behaviour, littering and harassing locals have been among the consequences of the Japanese government’s policies aimed at boosting tourism to the country (McCurry, 2019). Videogame-driven tourism and fan pilgrimages can also contribute to this process. For instance, *Persona* is a Japanese role-playing series enormously popular in the West, which, like *Shenmue*, gives players a high degree of freedom in a meticulously re-created everyday Japanese setting. The latest game is set in Tokyo, and in 2018, the game’s developer issued a statement warning pilgrims not to loiter in areas depicted in the game, like laundromats, cafés and supermarkets (Loveridge, 2018). Perhaps because of the guide map’s small scale and the game’s cult status, however, we are not aware of any such incidents caused by *Shenmue* pilgrims or users of the guide map. Although a full survey of residents and store owners in the areas depicted is beyond the scope of this chapter, the guide map’s creators and the store owners whom we spoke to did not report such incidents. Ms Oyamada states that ‘a lot of the *Shenmue* fans were actually considered an older audience, so they’re actually very well behaved, and we haven’t really received any negative responses concerning this campaign’ (City of Yokosuka interview, 15 August 2019).

Yokosuka’s Shenmue link as complex contents tourism

As a small-scale, low-cost ‘fan’ initiative of sorts, the guide map has clearly generated interest from the game’s niche fanbase and helped boost Yokosuka’s presence as a tourist destination on the micro-level. Based on the anecdotal evidence quoted from the interviews presented earlier, we speculate that the guide map has primarily attracted what Dubois and Gibbs (2018) term ‘general’ tourists and

tourists specifically travelling to Yokosuka for the guide map campaign, although a small number may also be serendipitous tourists who pick up the guide map at the information centre by chance.

But the guide map's actual direct impact on the city's economy and tourism is difficult to measure. The Tourism Division does not track the number of pamphlets taken by visitors (only the number distributed), nor has it conducted any research, such as surveys, on whether the guide map has encouraged people from outside the city to visit new locations or spend more time there than they would have otherwise. In contrast, the Tourism Division conducted a survey of participants in the *Pokémon GO* Safari Zone event and received 12,954 responses. Based on these responses, they used an analytics tool developed in-house by the city's Urban Development Department to calculate how much money visitors spent on purchases and transportation in the city. This determined that the event contributed ¥1.5 billion (approx. US\$14.2 million) to the city's economy (City of Yokosuka interview, 15 August 2019).

But even if the Tourism Division attempted a comparable analysis of the guide map – which at the time of our interview they had not – it would likely prove fruitless. The city's other subculture-themed contents tourism initiatives are mostly tied to a particular event with a specified duration, such as the one-day Safari Zone or the anime exhibitions that are held over several weeks. The *Shenmue* Sacred Spot Guide Map differs in that visitors can pick it up at any time and visit any number of destinations featured on the map. It is also affiliated with an older franchise, which, despite being recently 'revived' by the release of the remastered edition and *Shenmue III*, is recognisable mostly as a classic or cult rather than mainstream franchise. There are certainly detailed documented examples of 'pilgrims' from abroad travelling to Yokosuka specifically to visit locations from the game, both before and after the guide map's publication (see, e.g., AniKaneda, 2018; Lewis, 2014; Phantom River Stone, 2017; Robinson, 2015; Wright, 2019).⁴ But it would be particularly difficult for the Tourism Division to determine how many users of the guide map travelled to Yokosuka or locations featured on the map because of their connection to *Shenmue* rather than as part of their general tourism in the city.

As we noted in the first section, this is a challenge for analyses of contents tourism generally, which despite its focus on the 'contents' of a media text can be difficult to differentiate from other, more easily identifiable forms of tourism. The actual economic impact of the *Shenmue* Sacred Spot Guide Map, then, is likely minimal compared even with Yokosuka's other contents tourism initiatives in partnership with franchises like *World of Warships* or *High School Fleet*, which attract hundreds or thousands of dedicated fans. As Ms Oyamada states, the guide map's primary economic value is 'in terms of PR and in terms of promotion' (City of Yokosuka interview, 15 August 2019). At the same time, the actual cost to the City of Yokosuka for creating the guide map was also minimal. Ms Oyamada notes that the annual licensing fee paid to Sega for the rights to *Shenmue* is 'much, much lower' than that for *One Piece*, for example,

which was the current contents tourism campaign running during Leorke's visit to Yokosuka.

In this light, the *Shenmue* Sacred Spot Guide Map is a perfect example of the process that Seaton et al. (2017, p. 36) describe as 'complex contents tourism'. The guide map itself involves the use of a cult franchise resurrected almost two decades after the release of the last game in the series through an HD rerelease and a crowdfunded sequel. This provides a unique backdrop for the campaign: a period of reinvigorated interest in a slightly obscure series that has at best achieved modest commercial success and recognition from a dedicated fanbase. The campaign involves a series of small-scale initiatives driven from the bottom-up by city workers who are themselves fans of the game. But it has also been embraced at the top level by the former mayor, a fan of *Shenmue*, and by the current mayor – who has invested in subculture more broadly as part of what Ms Oyamada states is a strategy 'to make the city of Yokosuka a city of music, sports and entertainment' and who, as a former band member himself, recognises the economic potential of popular culture (City of Yokosuka interview, 15 August 2019). Thus, the guide map circulates in this complex environment, alongside Yokosuka's multilayered tourism initiatives, which encompass anime and videogame franchises and the city's military history and food culture – all of which overlap, intersect and intermingle in 'a complex and diverse tourism industry' (Seaton et al., 2017, p. 36). The *Shenmue* Sacred Spot Guide Map circulates in this environment: it is one unique, easily overlooked component of the city's broader strategy to attract tourists and investment as it transitions from a manufacturing and military hub to a services-driven creative economy.

Conclusion

Before Dr Tanaka, Prof. Koyama and I depart Dobuuta Street for our scheduled interview, there is one last destination on the guide map I want to track down: Suwadai Shrine, established in 1380, which appears in the game as Yamanose Shrine. We begin at the bottom of the 'slope leading from Dobuuta to Sakuragaoka' identified on the guide map, which in the game connects the two neighbourhoods. In reality, it is actually a steep hill off the main street of Dobuuta surrounded by residential buildings. After we clamber up a set of broken, uneven steps leading up the hill – not without difficulty in the intense summer humidity – we follow a dirt path leading to a park I suspect houses the shrine. Instead, we find an abandoned opening seemingly no one has visited in years, overgrown with weeds and swarming with insects. Sweating and incredibly tired from the climb, we spot the shrine below us, on the other side of this strange urban mini-forest. It turns out the entrance is not via the slope, as the guide map seemed to suggest, but from another small street off Dobuuta. We make our way down there and take some photos, although it does not evoke strong memories for me of the Shrine that features in the game.

(Leorke fieldnotes, 15 August 2019)

Unlike the examples of media and cultural tourism campaigns supported by government agencies that we opened this chapter with – like 100% Middle-earth, 100% Pure New Zealand or the Town of Film in Chōfu – the *Shenmue* Sacred Spot Guide Map is unlikely to have a significant economic impact. The aforementioned examples are linked to cultural products capable of mobilising thousands of fans from around the world and quickly and effectively commodified to meet the expectations of the most demanding fans. Even as an example of videogame-driven tourism, the guide map is a unique case for the reasons we noted earlier: the game's obscurity; the campaign's ongoing nature involving multiple, dispersed locations; and its grassroots creation with minimal direct input from the city or the game's publisher.

Nonetheless, the guide map is a strong example of a focused, locally crafted contents tourism campaign that attracts a modest number of local fans and international tourists already planning a trip to Japan, who might also include Yokosuka on their itinerary. This aligns with the city's subculture strategy, aimed at drawing in visitors from nearby tourist magnets like Tokyo, Yokohama and Kamakura. Therefore, the guide map's aim is not part of a national strategy aimed at attracting tourists to Japan or even attracting them to the Greater Tokyo Area, but one arm of Yokosuka's local efforts aimed at attracting new visitors to its spaces. Its small localised scale has also made it low cost for the city and helped it avoid the negative consequences of other popular culture tourism campaigns. These conditions might be present in other local economies that feature in videogames and could draw on the *Shenmue* Sacred Spot Guide Map as a case study. But the factors surrounding the guide map are quite specific and complex, making it difficult to replicate elsewhere.

As the interview and fieldwork reveal, this complexity extends to the recreation of locales from the game in the guide map itself. Dobuita Street and several shops, like Kakita and MIKASA vol.2, exhibit a strong, obvious connection to the game. But several of the locations featured on the guide map – the warehouse district, the former SOFLAKI store and Suwadai Shrine – are more symbolically or historically linked to the game than independently recognisable in present-day Yokosuka. Visiting them, for some fans, may be an important part of their pilgrimage to experience all the locations of the game. But for the authors of this chapter, it often reflects the misdirected imposition of the 'tourist gaze' (Urry, 1990) onto areas whose connection to the game had vanished, if it ever existed. Future research on this case study could analyse the online accounts of *Shenmue* pilgrims to Yokosuka or conduct surveys of guide map users to unpack in greater detail the synergies between the fictional and real-world locations it features. But this chapter focused primarily on the creation of the map itself and its incorporation into the city's broader cultural and economic policy. In doing so, we aimed to highlight and unpack one unique example of a videogame text whose potential for boosting tourism has been supported through urban policy at the micro-level.

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Notes

- 1 Only the first *Shenmue* game is set in Yokosuka. The sequels are set primarily in Hong Kong and a fictional village located in an arguably Japanised version of Guilin, Guangxi Zhuang Autonomous Region in China (see Liang, 2019).
- 2 At the time of the interview, Ms Oyamada was known as Eriko Furusaki. In this chapter, we retrospectively refer to her by her current name. Note that in online articles about the guide map that we reference in this chapter, her former name is used.
- 3 The questions were primarily posed in English by Leorke, with some additional questions asked by his Japanese colleagues Dr Tanaka and Prof. Koyama. Leorke's questions in English were first translated into Japanese by Dr Tanaka. The two interviewees, Eriko Oyamada and Sae Sato, responded in Japanese, with their responses translated into English by Robert Sato, the coordinator of international relations at the City of Yokosuka. In both cases, consecutive interpreting was used, whereby the speaker paused every few moments to allow the interpreter to translate their statements into the relevant language. A list of questions was also translated into Japanese by Dr Tanaka and provided to the interviewees in advance, although this document was used more as a guide than as a strict programme.
- 4 The focus of our chapter is on the municipal recognition of *Shenmue* as a drawcard for tourism, so an analysis of these fan 'pilgrimages' is outside the scope of this chapter. Although the guide map's creators do not explicitly identify this previous work of fans as a trigger for the idea behind the campaign, it is undeniable that these 'pilgrims' have been cultivating the image of the city for years by creating online communities where Yokosuka has been unconsciously promoted as a place of devotion. Through blogs and YouTube videos, these fans have documented the city with no more resources than their thorough knowledge of *Shenmue*'s street layout, drawing parallels between the physical

and fictional image of the place. Drawing on Macgregor Wise (2008, p. 40), this is an example of foreigners' *pulling* cultural products instead of *pushing* them from the Japanese perspective. To a certain extent, this is true of the case study of this chapter: early *Shenmue* pilgrims initially pulled Yokosuka as a cultural product, thanks to their knowledge of it through the videogame, until the city's authorities began to push it for consumption by visitors from outside the city as part of their contents tourism strategy.

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4 Geogames for change

Cocreating the future of cities with games

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Introduction

This chapter concentrates on *geogames for change* that are designed to involve citizens/players in the cocreation process of future cities. Geogames for change is a category of serious games, games developed for more than just entertainment and fun, sometimes also called nonentertainment games (Michael & Chen, 2005; Ratan & Ritterfeld, 2009; Ritterfeld & Vorderer, 2009). An important aspect of serious games is their contribution to learning and education (Squire & Jenkins, 2003; Squire & Giovanetto, 2005; Squire, 2006). Additionally, geogames add a geospatial component with increased realism by visualising the physical environment in the game. They may also use the real world in the game, as demonstrated by the example of *Pokémon Go*, which is one of the most successful mobile games to date. It uses augmented reality technology to superimpose computer-generated information in the form of virtual characters/creatures over the physical surrounding in which the player plays the game.

Geogames were first mentioned by Schlieder and his colleagues (Schlieder et al., 2005, 2006). Initially, they were defined as location-based games that can be played in public spaces with the help of information technology, mostly the use of a GPS and a smartphone. They emerged in the early 2000s (Leorke, 2018). A few years later, Ahlqvist and his colleagues (Ahlqvist et al., 2018; Ahlqvist & Schlieder, 2018) started using the term ‘geogames’ in a broader sense for games supported by geographic information systems (GIS) technology. Geogames are an emerging research area and have been implemented in urban planning, cultural heritage, geography and geoinformation science. Currently, the field of geogames applied to urban problems, sometimes referred to as urban games (Billger et al., 2012; De Luca & Bertolo, 2012; Ferri & Coppock, 2013; Vieira & Coutinho, 2016), has been rediscovered especially due to the development of new tools and technologies enabling the testing, studies and implementation of games that can be used online (Poplin, 2017) with the help of online browsers. The expression ‘urban games’ can be traced back to the early 1970s, when they were first mentioned by Dupuy (1972). He identified about 100 ‘simulation games’ on the theme of the cities and called them ‘urban games’. Abt (1970) and Sanoff (1979) were among the first authors to introduce serious games for urban planning as a concept

and possible implementation. For a while, urban games have only been considered games that can be played in the urban environment by using the real-world physical spaces and places. The expression is used broadly today to encompass games that concentrate on urban problems or are played in the urban environment.

Urban planning and civic engagement are becoming creative playgrounds for game designers. They represent novel and emerging applications areas for the game industry. Urban planners and designers are recognising the power of games and their potential in gamifying the whole, or just parts of, an urban planning process. Planners and designers are progressively becoming more open for novel, game-based methodologies that enable them to visualise their plans in innovative online applications that are accessible 24/7 on the Internet. Such applications may invite citizens to explore the current situation in their neighbourhoods, towns and cities, to form 'coalitions' online to meet others who share the same or similar ideas, negotiate alternative designs or discuss the advantages and disadvantages of the preferred alternatives and in doing so participate in the cocreation and design of neighbourhoods and the future of cities.

This chapter explores how to design games that may involve children and youth in urban planning processes following the idea of an inclusive and ludic city, a city in which everybody contributes and cocreates in a playful, seamless way. We recognise that there is a need to develop methods and techniques of participation in planning that are inclusive and focus on equity (de Andrade, 2019). How can games be designed to enable children to explore the area of focus in the planning process, to learn about the landscape and the situation in the city/town and to negotiate or propose interventions that can serve them and the whole community? The main focus of this chapter is on engaging children with the help of games and exploring two games that may support some of the phases of engaging children and youth in urban planning. The study is based on the implementation and testing of two geogames – the Geodesign Card Game and *GeoMinasCraft*. Both games were developed to study their possible implementations in urban planning and learning about the landscapes while engaging children and youth. The Geodesign Card Game was designed by Bruno de Andrade (de Andrade, 2019) during his PhD studies. *GeoMinasCraft* was designed by Ítalo de Sena (de Sena, 2019) also during his PhD studies. Both developers of these games are also coauthors of this book chapter. Both of the games aim to enable the players (children and youth) to get involved in learning about their environment and to explore the possibilities for building locally. Additionally, they aim to teach children and youth about protecting the diversity of the landscapes, appreciating their value and cocreating the future of their hometowns. The Geodesign Card Game takes an example of Tirol, a small town in Santa Leopoldina in Brazil. *GeoMinasCraft* focuses on Ouro Preto, a beautiful historic town in Minas Gerais, also in Brazil.

In this chapter, we analyse how these two geogames for change can support urban planning processes through their implemented online function and engage youth in explorations of future visions for the places in which they live. These online functions include virtual interaction, experimenting, exploring, designing, learning, communicating, negotiating and consensus building. We then explore

the phases of an urban planning process and interlink them with functions and activities that can be implemented in a game-based environment. The four phases of urban planning process as suggested by the UN-HABITAT are discussed in terms of the presented functions of geogames in general. This analysis represents a conceptual approach and does not yet discuss possible implementations of games in each of the presented phases of the participative urban planning processes. It is a first step towards a more comprehensive conceptual framework for geogames for urban planning. We conclude the chapter with observations related to the game design and the implementation of the two studied geogames in urban planning processes linked to the UN-HABITAT (2002a, 2002b) process of sustainable planning.

Towards a new utopia for cities: inclusive and ludic cities as a step towards integration and respect for the diversity of actors

To begin with, we identify the two key concepts that frame our research: the inclusive city and ludic city. In the vision of an inclusive and ludic city the actors – citizens and other stakeholders – are included in the cocreation of the city and envisioning of its future in a playful, seamless way. The inclusive city is also promoted by UN-HABITAT through its Global Campaign on Good Urban Governance and is set on what they call good urban governance norms. An inclusive city is defined as ‘a place where everyone, regardless of wealth, gender, age, race, ethnicity or religion, is enabled to participate productively and positively in the opportunities cities have to offer’ (UN-HABITAT, 2002a). Inclusiveness in cities strives to reduce inequality and social tension; incorporate the knowledge, productivity, social and physical capital of the poor in city development; and increase local ownership of development processes. Inclusive decision-making and civic engagement in urban planning can be actively supported by game-based environments, which can then contribute to good urban governance norms. In the broader agenda of our research, we explore game concepts, designs and implementations that may invite underserved and underrepresented communities to participate in the cocreation of their environments. For this research, we selected children and youth to represent the voice of one of these often-underrepresented groups.

A ludic city sees the city as a big playground: it may invite players, stakeholders, planners and citizens to playfully engage in the creative act of designing their living environment. The ludic quality (‘ludic’ originating from Latin, meaning ‘play’) of games and play have a kind of vital omnipresence. A ludic city is a play-related design city whose centre space can be devoted to meetings, gatherings and play, comprising all varieties of games, intentionally for cultural enrichment: learning engaging with the theatre and sports (Lefebvre, 1978, 1991). The inhabitant of this city is the one who learns to playfully explore ways of life, a kind of combination of *homo ludens* (Huizinga, 1950) and *homo faber* (Velloso, 2011), a playful creator.

Stevens (2007) looks into the use of public spaces and how can they be used, designed and created for play and playful, or rather ludic, experience. In this sense,

play becomes the core value of the ludic city, an artistic and creative expression of inhabiting this city. The ludic is associated with spontaneity and sociability, representing a poetic dimension of life that can be restored in everyday life, especially on the streets, in conversations and at meetings, accompanied by its playful elements of surprise, unexpectedness, tension, experimentation, information and knowledge (de Andrade, 2019).

Playful public participation discussing the future of our communities and cities

From the utopian ideals of an inclusive and ludic city, we move to the current reality and organisation of urban planning processes. These processes tend to be complex and deal with specific issues involving solving current problems in cities and planning for the future of these cities, all encompassed in the same urban planning document. The UN-HABITAT (UNHSP, 2007), in their report titled *Inclusive and Sustainable Planning: A Guide for Municipalities*, suggest four phases of planning at the municipal level, as shown in Figure 4.1. This process serves only as an example in this chapter about how urban planning can be structured and organised in phases. The following are the four suggested phases:

- 1 Urban situation analysis,
- 2 Sustainable urban development planning,
- 3 Sustainable action planning,
- 4 Implementation and management of projects.

Figure 4.1 Phases of inclusive and sustainable urban planning as defined by UN-HABITAT.

Source: (UNHSP, 2007)

The main focus is on sustainability and on bringing various perspectives and sectoral priorities together in a dynamic and people-centred planning process that supports the development of the common future of the municipality. In their report, a special role is devoted to the municipality planning team whose role is to organise and manage the planning process.

Public participation in urban planning is often organised as a top-down process led by the administrators and officials. Because it is a process and due to how it is organised, it has generally not attracted many citizens or other stakeholders to actively participate and be engaged. Novel ideas on how to engage citizens and stakeholders in the process of cocreation of their cities and their own neighbourhoods are needed. Poplin (2012, 2014) suggests organising civic engagement in the form of a playful public participation, including games, moving, sketching, dancing and other playful activities, that results in a shift of the process from being cumbersome and top down to a pleasant, enjoyable and sometimes even entertaining bottom-up activity.

Games for change and geogames as tools for the implementation of playful public participation

Games for change (G4C) started as an initiative striving for social change supporting the idea that games can be used to engage in a meaningful dialogue about the future of communities and their environments. G4C is also a name of a non-profit organisation in the US, one that is building the field by providing support, visibility and shared resources to individuals and organisations, by using digital games for social change. Such games can be applied in urban planning (Poplin, 2018; de Andrade, 2019), civic engagement, military training, disaster mitigation, crime reduction, redesign of public spaces, cultural heritage (Anderson et al., 2010), history (Londoner, 2011), learning (Gee, 2003; Kirriemuir, 2003; Michael & Chen, 2005; Bennett et al., 2009), geography (de Sena, 2019) and even business and management (Blossom, 2010). They may address complex social issues such as poverty, racism, discrimination, war, peace, human rights, disease and so on. One of their goals is to raise awareness by integrating data and stories from real contexts in order to address societal problems. Games for change can be designed to support political and social interventions or to educate players about cultural issues (Flanagan, 2009). Broadly thinking, in a ludic city, games may be spontaneous gatherings and unplanned events; be well organised, structured and led by the city officials or coaches; or emerge as grassroots activity or regular community events.

Geogames add the geospatial component to the concept of games for change. The geospatial component may be expressed in a known location and its visualisation in the game. A location can be visualised as a particular place, such as a community room, a house or a park, a neighbourhood, a city or even a state or province. The representation may be a highly realistic representation, depicting the real-world situation, or a more stylised, almost cartoon-like representation. Geogames may use geocontent (i.e. real-world spatial information; ‘geo-’ coming from the Greek word ‘Gaia’ – the goddess of Earth) or may be mediated by

geoinformation technology, such as GIS. Some commercial games, such as *Pokémon GO*, *Game of Thrones* and *Harry Potter: Wizards Unite*, use geocontent in their implementations. *Pokémon GO* players encounter eponymous, virtual and creatively designed creatures in a real-world by using their mobile devices; the players can catch or battle with them. *Game of Thrones* uses maps for the spatial representation of the game environment. *Wizard Unite*, made by the same developer of *Pokémon GO*, includes augmented reality battles and monsters to interact with, bringing the fantasy world of *Harry Potter* to the physical world. Geogames are also an emerging research area and have been studied as implementations in urban planning (Krek, 2008; Gordon & Manosevitch, 2010; Mallan et al., 2010; Gordon & Schirra, 2012; Poplin, 2012; Feldt, 2013; Reinart & Poplin, 2014; Tóth & Poplin, 2014; Vemuri et al., 2014; Devisch et al., 2016), cultural heritage (de Andrade & Almeida, 2016; Andrade et al., 2016), geography (Foth et al., 2009; de Sena et al., 2018) and geoinformation science (Schlieder et al., 2005, 2006; Ahlqvist et al., 2018; Ahlqvist & Schlieder, 2018). In 2018, the book *Geogames and Geoplay*, edited by (Ahlqvist & Schlieder, 2018), was published, which is a first-of-a-kind book on the topic of integrating online GIS and digital online games. Using geogames in the process of civic engagement represents a potential that still needs additional research in the ways geogames can be implemented to provide intergenerational and cross-neighbourhood collaborations with citizens in urban planning; engaging the elderly and children around the same issue is just one example.

Research focus on engaging children with geogames

In this chapter, we explore how children and youth, as an example of an under-represented group who are often not engaged in urban planning processes, can be involved in urban planning and participate by expressing their needs, wishes, dreams and observations. Research shows that the concept and a tool of ‘a game’ can be used in at least two ways (Tóth & Poplin 2013a, 2013b, 2014; Poplin et al., 2017). In the first type of engagement, the game represents a method or tool that may enable and encourage youth engagement through its gameplay. It is the central element around which the processes of participation, engagement and cocreation are organised. The game becomes the central activity that integrates activities designed to encourage civic engagement. In the second type of engagement, the game itself becomes the main goal of participatory activity. The civic engagement is organised around stakeholders, in this case children and youth, creating a game. By creating the game, they learn about the urban planning process and the location or policy being developed and discussed.

Different stages of planning and engagement can be implemented in the form of a game. These stages may include, but are not limited to, problem identification, commenting on the existing proposals, developing alternative suggestions, envisioning the future and learning about the current situation. Geogames may offer basic visualisations and presentations of the current situation in the neighbourhood, city or region or more sophisticated 3D visualisations of the planned area, projects or activities. There are many ways that games can be implemented in an

urban planning process to engage children and youth. In this chapter, we focus on two situations in which children can be engaged with the help of games:

- 1 In the first situation – with the help of the *Geodesign Card Game* – we study the process of understanding the planning situation and the cocreation of alternatives in which a city can develop further.
- 2 In the second situation – with the help of *GeoMinasCraft* – we study the process of exploring the city, its landscape and its diversity.

How can these two processes be best supported by the implementation of a game? How can a game be implemented? How will it be used and accepted by children? To study these questions, two games have been implemented and developed by coauthors de Andrade and Sena (de Andrade, 2019; de Sena, 2019) as part of their respective PhD theses. The main game stories and concepts of both games are presented in more detail in the next section.

Geogames for civic engagement in urban planning: engaging children and youth

The two geogames presented in this chapter – the *Geodesign Card Game* and *GeoMinasCraft* – were selected due to their implementation for the purpose of engaging children and youth in an urban planning process. They aim to demonstrate how visualisation, exploration, collaborative cocreation, communication, learning, negotiation and alliances can be implemented in a game-based environment. The *Geodesign Card Game* engages youth in learning about their home environment and in participating in the creation of visions for the future development of their hometowns. *GeoMinasCraft* enables them to explore and learn about the environment.

Geodesign card game

The *Geodesign Card Game* was inspired by ‘The City as a Card Game’ (Santos, 1988), in which the city is in the centre of the game. In this game, different cards represent the citizens and are divided into the following four social classes: cups represent the clergy; swords represent the nobility; coins represent the bourgeoisie; and clubs represent the peasants. The citizens gain advantages in the game when they obey the rules as defined in the game. Built on this idea but allowing for more freedom, the *Geodesign Card Game* is designed as an instrument for collaboration (Paba, 1998) and decision-making (Paba & Perrone, 2002), including a combination of participatory techniques such as Children’s Jury (Pecoriello & Paba, 2006) and Theater of the Oppressed (Boal, 2000) for geodesign (Steinitz, 2012; Ervin, 2016). The game seeks to respond to the need for new methodologies and techniques to include children and youth in landscape and urban planning.

Goal of the game and premise

The *Geodesign Card Game* concentrates on engaging children in urban planning processes and teaching them about local values. The main goal of the game is to enable children to propose alternative futures for the rural town Tirol, located in the municipality of Santa Leopoldina, the state of Espírito Santo in Brazil. In the game scenario, the children can collaborate or form coalitions and envision the future of Tirol. They are asked to imagine that the town's built heritage, a 160-year-old legacy from Austrian Tyrolean immigrants, is at risk. The road infrastructure is poor, landslides occur during rainy seasons and the population is shrinking due to the lack of opportunities for education and work. What can the children do to prevent destruction and to contribute to the positive development of their hometown?

Visualisations and explorations

The first stage of the gameplay is organised around explorations of the visualised area. Figure 4.2a illustrates the administrative borders of Tirol as presented to the children in the virtual navigation tool. It includes a thematic map with hyperlinks representing the main points of interest, including all the children's homes. Other visualised points of interest include locations of the church; their local marketplace, Endringer Market; and two hotel restaurants, named Gasthof Inn and Ecological Farm Inn. Figure 4.2b shows children using a laptop and the virtual navigation tool that enabled them to explore Tirol and click on points of interest. By clicking on points of interest, a visualisation of this point of interest will show up in the form of a graphic displaying their homes, the church, the marketplace and the restaurants, among other points of interest.

Collaborative cocreation: proposing interventions

The next phase of the gameplay focuses on learning about possible urban interventions in Tirol. In our experiment, 15 children got involved in this experimental process. The material given to them included the following:

- The **role cards** represented the roles of a mayor, a teacher, a farmer, a trader or a community (Figure 4.3).
- The **problem cards** included situations of a damaged road, a wildfire, a high-rise building (to conform the buildings proportionately and aesthetically), an illegal dumping and an empty, poorly used public place (Figure 4.4).
- The **best practice cards** included a planned road, a forest, a low-rise building, a clean environment and an equipped public place (Figure 4.5).
- The four **printed panoramas** were the compositions of four pictures arranged in a collage. The pictures were taken of the town centre, east of Tirol's centre, south of the town's centre and southeast towards Mangaraí.

Figure 4.2a The map showing points of interest.

The 15 children, aged between four and 11, were then divided into five groups and asked to choose one of the roles. They were given time to study and discuss the problem cards with their specific meaning and practice cards representing solutions to the discussed problems. The children were working with the material given to them, including the four panoramas. Four to six rounds were performed for the children to be able to discuss a variety of proposed interventions. Each round of the game began by drawing a card containing a problem, which was then discussed and dealt with best practice cards. Some additional design images were

Figure 4.2b Children exploring the visualised area in virtual navigation of Tirol.

Source: (de Andrade, 2019)

made available to them as the result of the previous discussions and based on their interests. In each of the rounds, the groups presented ideas for the future. The discussed interventions were then submitted for voting. The winner of the round was selected and allowed to position their visual representation in the panorama. Figure 4.6 shows children working on the proposals for different interventions for Tirol.

Negotiations and alliances

During their rounds of discussions, the children could establish alliances or form opposition groups. They were confronted with conflicting ideas and had to learn how to defend their own ideas while proposing interventions. They were learning how to collaborate in the group, playing the selected role. Between constructing the second panorama and constructing the third panorama, there was a change in the dynamics of the game. Two groups representing the teacher and the community started dominating the discussion. They formed a spontaneous alliance due to their similar interests in developing the future of Tirol. Together, they defeated others' proposals; they voted for each other's projects and convinced other players

Figure 4.3 Tirol's local social actors. From left to right: mayor, professor, farmer, merchant, community.
Source: (de Andrade, 2019)

Problema
estrada

Problema
queimada

Problema
nova arquitetura

Problema
lixo

Problema
espaço público

Figure 4.4 Problem's cards. From left to right: broken road, wildfires, high buildings, illegal dumping, unequipped public space.
Source: (de Andrade, 2019)

Figure 4.5 Best practice’s cards. From left to right: planned road, forests, low-rise buildings, clean environment, equipped public space.
Source: (de Andrade, 2019)

Figure 4.6 *Geodesign Card Game* dynamics.

Source: (de Andrade, 2019)

to join them, promising their votes for their projects. This process of forming coalitions and alliances demonstrated how quickly children understood the rules of the game and their options in representing their ideas. They used their skills and negotiation powers to explore what is possible in the game and how to strengthen their collaboration in order for their ideas to win. The results of their interventions, discussions and negotiations were reflected in the final designs of the proposals for Tirol. Figure 4.7 shows two examples of the designs in the form of a panorama collage.

Learning

Throughout the gameplay, we observed how learning happened in several different phases. Even though learning was not intentionally designed as one of the central elements of the game, it became one of the fundamental cornerstones of the gameplay of the *Geodesign Card Game*. So that children could propose future alternatives for Tirol, they had to learn about the existing landscape and the rules for land division. Learning also took place during the phase of studying the cards in the deck with options available in these cards. Learning how to form coalitions

Figure 4.7 Example of the resulting geodesign panorama collage.

Source: (de Andrade, 2019)

and collaborate on an idea was a valuable experience for all the children who were involved.

Conclusions and observations

The children involved in playing the *Geodesign Card Game* proposed an expansion of agricultural production, specifically the production of ginger. Other proposals included new schools teaching English and German, universities, small industries such as a cookie shop and designing the city to include more water elements. They chose to maintain one- or two-floor buildings rather than proposing high-rise buildings. They expressed an understanding and a sense of belonging noted by the choice of preserving the typology and proportion of the existing buildings. A sharper critique was directed towards the road infrastructure; they criticised steep roads and their poor maintenance. These streets make it difficult or even impossible for children to safely and freely explore the landscape. We noted also their awareness of the town's need for the development of local economic alternatives and the expansion of educational options. Currently they only offer early childhood education, which is how they presently cope with the shrinking population in this area.

On the basis of our observations and discussions with the participants, the children were eager to use the virtual navigator tool. It was easy for them to navigate the thematic map and find places of interest visualised on the map. They were able to recognise familiar places, the locations of their homes, the bus route and their friends' houses. The children were able to identify with the roles presented on the cards. The issues on the problem cards were easy to understand, and designing their innovations and panoramas resulted in vivid discussions.

GeoMinasCraft

GeoMinasCraft was inspired by *Minecraft* and its ability to digitally represent landscapes, enabling visualisation, interaction and learning about natural resources, the land use and the possibilities to build on the mining areas. It invites the player to explore the cultural landscape of Ouro Preto, a town in Minas Gerais, Brazil, founded as a village by the Portuguese crown on 11 July 1711. The village expanded into a town during the Brazilian gold rush that started in the 1690s, and a rapid growth after 1950s (de Oliveira, 2010) resulted in many new buildings that were built in risk areas (Calil, 2018), not preserving historic sites or natural resources (Fonseca et al., 2001). *GeoMinasCraft* was designed to communicate landscape values and consequentially core functions related to geodiversity (Brilha et al., 2018). Geodiversity was defined by Gray (2013, p. 12) as a composite that includes ‘the natural range (diversity) of geological (rocks, minerals, fossils), geomorphological (landforms, topography, physical processes), soil and hydrological features. It includes their assemblages, structures, systems and contributions to landscapes’. The game also implements online communications that may be attractive particularly to the generation of digital natives, those born in the age of information technology (Prensky, 2001).

Goal of the game and premise

The main goal of *GeoMinasCraft* is to invite the player to explore the cultural landscape of Ouro Preto and learn about its diversity. Ouro Preto’s growth was quick and not well regulated, which resulted in increased building in high-risk former mining areas, unplanned urban growth and a lack of protection for and conservation of historic sites. The gameplay introduces three quests and integrates the possibilities to explore, collect and build, which are the main concepts of the game design. The user/player enters an adventure map of the visualised area of Ouro Preto and is given the following experiences: explore, collect and build. *Explore* enables the players to walk or ride through the landscape and to visit different places in the town of Ouro Preto. *Collect* concentrates on gathering information about points of interest (different geosites) and their historical and cultural values. It includes the task of finding hidden gold and iron nuggets. *Build* offers the player the possibility to build a visitor centre, using the background information provided by the game.

Visualisations and explorations

GeoMinasCraft enables the player to explore the geodiversity of the landscape in Ouro Preto. It is implemented in the game environment of *Minecraft*. It was developed by applying the geospatial data interoperability and game modification of *Minecraft*. The spatial data was processed by using ETL tools (exchange, transform, load) in order to recreate Ouro Preto’s landscape in game, factoring

in the main layers related to its geodiversity, such as topography, hydrology, geology and historic sites from gold cycle period. After that, using modifications for *Minecraft*, the game design was produced as a way to communicate landscape values to the player, presenting it through dialogues with nonplayable characters.

In *GeoMinasCraft*, the player is invited to learn about the conflicting relationships between land use, its geotechnical conditions and tourism. Its visuals concentrate on the former gold-mining risk areas that are now used as an archaeological park available for tourists. Figure 4.8a represents a visualisation of Veloso's Mine, a former gold mine restructured into a tourist attraction. Figure 4.8b is a picture of the real-world facade of Veloso's Mine. Figure 4.8c shows the visualisation of Ouro Preto landscape represented in *GeoMinasCraft* containing aqueducts, roads, vegetation, neighbourhoods and the Morro da Queimada Archeological Park visualised within its boundary. The exploration of the landscape is motivated by a gamified play in which the player must find five iron nuggets and five gold nuggets. The nuggets are distributed along the exploration route. Each of the objects gives the player specific information about the landscape. After collecting all nuggets, the player gets a message asking them to move on to the next quests. In the next step, the player must talk to Danilo, the ranger for Morro da Queimada Archeological Park.

Figure 4.8a Minecraft model of Veloso's Mine.

Figure 4.8b Real facade of Veloso's Mine.

Figure 4.8c Ouro Preto landscape visualised in *Minecraft*.

Source: (Sena, 2019)

Communication

To complete the quests designed in the game, the player must communicate with the characters that appear in the game. All implemented characters are nonplayable characters and respond to the player, giving the player advice for the next steps in the game. The communication on the first level happens with Ana, who teaches the player how to play the game and gives them basic instructions. The player can talk to eight nonplayable characters, who provide information about the geodiversity of the explored area. They also share local values and explain the importance of the environmental context and how the changes in the landscape can be made in order to protect the landscape. Some nonplayable characters represent the people of the place and share information related to Ouro Preto's cultural landscape, historical sites, conservancy, risk and tourism. The communication concentrates on the relationships among the landscape, the geosystem services and the people of the place. Figure 4.9a shows the nonplayable character Teteco, a geographer and Andorinhas Natural Park ranger, who shares information about how to trade nuggets for blocks or bricks, for building in the game. Figure 4.9b shows a virtual visualisation of an iron mining tailing dam. The communication of the player with the nonplayable character relates to reuse its sediments, which enables to produce bricks for civil construction encouraging the player to think about the type of material to gather, supporting the ideas of conservation and sustainability.

Construction, design and building

The last quest of the game requires the players to build a visitor centre in the Morro da Queimada Archeological Park. It invites them to identify and locate

Figure 4.9a Nonplayable character Teteco, geographer and Andorinhas Natural Park ranger.

Figure 4.9b Visualisation of the tailing dam with risk warning signs.

Source: (Sena, 2019)

three places inside the park – one of which the player can possibly build, the visitor centre. The park manager, Christian, gives directions on how to reach these three selected places. After receiving this information, the player can modify the landscape by placing or removing the blocks that represent the landscape. These blocks can be placed anywhere in the environment. The player is then invited to select a place in which the visitor centre will be built. The player is given a variety of material options for building. These materials are provided by the park ranger (Figure 4.9a) of Andorinhas Natural Park and are common in the region gained by the reuse of tailing dams' sediment. They include iron, gold, quartzite, wooden planks and bricks.

Collaboration

The game was played and tested by children and youth. They were between seven and 16 years old and came from two Ouro Preto neighbourhoods: São Cristóvão and Morro Santana. These neighbourhoods are inhabited mostly by low-income people, and they lack urban facilities and policies. The children and youth worked in pairs. Two young players used one desktop/laptop computer, to encourage the exchange of experience and collaboration. The players were given a field diary with an attached map of the landscape visualised in the game. Figures 10a and 10b show children working together to accomplish quests in the game. Their discussions centred on questions about what was important to do first, which strategy to use to take notes and how to use information to find the three places where the visitor centre can be built. Young players were supervised by adults, who also

Figure 4.10a Players consulting the map to locate places following the directions given by a nonplayable character.

Figure 4.10b Players sharing tasks during the gameplay; one is navigating using the map and the other one is controlling the character.

Source: (de Sena, 2019)

reminded them to finish the game on time. Most of the players knew each other, and some were friends, knowing each other from school or from their neighbourhoods. This fact provided a safe and inviting environment for their communication and collaboration. The pairs were sharing tasks, making decisions about who was going to work on building and who was going to interpret or describe the

information. During the process of choosing the materials and the place to build, players were negotiating about the best place to build, using their imagination to figure out where the visitor centre could be built.

Conclusions and observations

GeoMinasCraft was played by 39 children and youth. They were all invited to play it during the Ouro Preto 2019 Winter Festival. Observing the players working together, we could notice their exchange and their strong determination to complete the game. All playing pairs completed the travel path in the game, communicated with the nonplayable characters and built a visitor centre. Since the nonplayable characters represented the local leaders, they provided instant motivation for the players to keep on playing the game and to accomplish the quests as designed in the gameplay. The involved children and youth were able to recognise the physical locations implemented in the game, which gave positive feedback on how they were depicted in the game. Placing blocks in *Minecraft* was tiring at times because the players had to move each of them to the new location, and to mitigate this, they sometimes switched places in codesigning and building the visitor centre.

Towards a framework of implementing serious games in urban planning processes

Games can be implemented in a variety of planning process and their phases, and they can support different functions and operations in each step of the process. Games can be implemented in a variety forms: in an analogue form or in digital form online. Alternatively, they can combine both forms and be partially offered online, combined with analogue additions. The inclusion of game elements into urban planning processes (i.e. the gamification of urban planning processes) depends on the organisers, those who implement it and the creators of the game-based environments.

To deepen the discussion, we take the UN-HABITAT process as suggested for a sustainable development of municipalities. Table 4.1 lists the four main planning processes and the activities needed in those processes. Activities that can be organised around games or with the inclusion of games are listed in each consequent row. The game-based activities include visualisations, explorations, creation (construction, design and building), communication, collaborative cocreation (proposing interventions) and learning. The games can be developed to enable intergenerational participation in which children and youth play the game together with other underserved populations, elderly people or their parents. Ideally, in its utopian way, they may be implemented to encourage and enable ideas and concepts of an inclusive and ludic city.

Table 4.1 lists just a few specific examples of possible game implementations. A more specific framework may enable urban planners and practitioners to select exemplary games that showed excellent performance for a selected phase or function that can be supported with a game or implemented in a game-based

Table 4.1 Example of the gamification of a municipality in sustainable urban planning processes and its phases.

<i>Urban planning phases</i> <i>Game-based activities</i>		<i>Phase 1: Urban situation analysis</i>	<i>Phase 2: Sustainable urban development planning (SUDP)</i>	<i>Phase 3: Sustainable action planning</i>	<i>Phase 4: Implementation and management of projects</i>
Visualisations		Urban situation profiling	Urban consultations	Drafting action plans	Project design
		Urban situation appraisal	Drafting the SUDP		
		Investment capacity assessment			
Explorations		Consolidated urban diagnosis	Urban consultations	Drafting action plans	Project design
		Urban situation profiling	Drafting the SUDP		
		Urban situation appraisal			
Creation: construction, design, building		Consolidated urban diagnosis	Drafting the SUDP	Local resource mobilisation	Project design
Communication		Stakeholder analysis	Urban consultations	Drafting action plans	Project design
		Urban situation profiling	Drafting the SUDP	Local resource mobilisation	
		Urban situation appraisal		Public-private partnerships	
Investment capacity assessment		Consolidated urban diagnosis			
Current urban situation			Urban consultations	Local resource mobilisation	Project design
			Drafting the SUDP		
Collaborative cocreation: proposing interventions		Stakeholder analysis	Urban consultations	Local resource mobilisation	Project design
		Urban situation profiling	Drafting the SUDP		
		Urban situation appraisal			
Negotiations and alliances		Investment capacity assessment	Urban consultations	Local resource mobilisation	Project design
		Consolidated urban diagnosis	Drafting the SUDP		
Learning				Drafting action plans	

environment. Table 4.1 represents the first step towards a more comprehensive framework for including games in the urban planning process. It shows only the functions possibly implemented in geogames for change, which can serve those involved in urban planning processes.

This chapter illustrated how this might happen, by providing two examples of geogames for change, namely the *Geodesign Card Game* and *GeoMinasCraft*. Both games were implemented to engage children and youth in urban planning processes. The *Geodesign Card Game* added the possibilities to explore, discuss and negotiate alternative futures of the selected area. Meanwhile, *GeoMinasCraft* concentrated on exploring the landscape and learning about its diversity and function.

Following experiments with these two games, we identified the main functions of digital online games and studied which phases of the urban planning process could be implemented to better support the process and the involved stakeholders. These functions included visualisation, exploration, creation, communication, collaborative cocreation, negotiations and alliances, and learning.

- **Visualisation:** Geogames can provide realistic, attractive and interactive visualisations. The player/citizen can explore them online anytime the player/citizen wishes to do so. They can be zoomed in or out on to show different levels of detail and to be presented in 2D or even 3D visualisations. They can be combined in a multimedia online system combining maps, 3D visualisations and pictures or videos of the place. A 3D virtual tour of the place can be included in the game.
- **Exploration:** An exploration of the place can be combined with alternative visualisations and material organised and stored in the form of texts, documents, descriptions, pictures, maps or videos. The phase of exploration can be gamified to motivate the player/citizen to keep on exploring and learning about the current and planned situation.
- **Creation:** Creation can take on a variety of forms: creating proposals, discussing possible interventions, building or designing. A gamified creation may be more competitive or fun to get involved with. The social aspect of this phase becomes important. Some players may want to join a group that is already creating proposals, ideas or interventions. Similarities among ideas may be involved.
- **Communication:** Communication can happen among game characters, among players of the urban game or even among the characters implemented in the game. Communication is the way in which information and ideas can be shared, coalitions and alliances formed and issues discussed. Why not have fun in this phase as well? It's time to communicate.
- **Collaborative cocreation:** Collaborative cocreation is a broad term. It is the phase in which players with similar ideas decide to join forces and create alternatives, suggestions, interventions and solutions to existing problems.
- **Negotiations and alliances:** A high quality counterargument can motivate players to find better arguments for their own suggested interventions and

solutions. This is a phase in which counterarguments and better solutions can be discussed and confronted. The result of this process is a better understanding about which interventions can benefit the community the most.

- **Learning:** Learning happens on so many levels. Players learn about the visualisations, the platform, the problems and issues, possible solutions to these problems, the situations of other players, their perceptions of the environment and planned solutions. Learning is multidimensional and cross-sectoral or happens across economic and educational differences. It is a fundamental part of every geogame for change.

Conclusion

This chapter represents the first steps towards a more comprehensive framework for gamifying parts or the whole urban planning process. Designing a more comprehensive framework for gamification of urban planning is in the making. This framework will include specific examples of games that were developed to support a selected phase of a planning process. It will also distinguish among different stakeholders involved in the planning process. The selection of games will be based on their success and reported testing and success as described in the research literature or by practitioners. Designing a game-based framework for civic engagement in urban planning represents a natural next step following the work accomplished in this chapter. This research contributes to the bigger goal of finding and adopting novel approaches and implementations, which will enable urban planners, architects and designers to involve more citizens in the process of creating functional, attractive and pleasant places that will satisfy the needs of all citizens, including those who are often excluded or underrepresented. The broader goal is to support the weakest or marginalised in our society and create more inclusive, sustainable and ludic cities.

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Part II

Smart and playable cities

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5 Urban play in practice

Seven lenses exploring the sociocultural value of playable cities

Troy Innocent

Background

Cities are complex, layered, messy, contested spaces; they are also home to a multiplicity of people and place, a generator of cultural and social capital. Rapidly expanding urban centres are shaped by competing forces – mobility, datafication, infrastructure, housing security, well-being and sustainability – that in strategies for urban governance are often connected to a sense of civic identity. Citizens are situated in a discourse in which they live: a creative or smart city; a resilient or sustainable city; the world's most liveable city; and so on. In contrast, urban play is situated directly in relation to the experience of the city, which is often more contingent, diverse and highly variable in its levels of compliance with a singular civic identity. Within the realm of urban play, many positions and perspectives inform its role in this complex space, and they – somewhat inconveniently for some – challenge or question approaches to issues that arise from contemporary processes of urbanisation.

Smart cities (Kitchin & Dodge, 2011; Townsend, 2013) are the dominant narrative in contemporary civic identity. Typically using sensor networks, datafication, connected devices and other digital technologies as part of strategies of urban governance (Meijer & Bolívar, 2016), they are often also connected more broadly to cultural and social values such as liveability and sustainability. Technological metaphors such as the 'city as a platform' (TM Forum, 2017) and a 'citywide operating system' (Marvin & Luque-Ayala, 2017) are often introduced into the narrative that articulate an optimal, autonomous and benevolent machine tending to the needs of its citizens. Criticism of this approach questions the reliance on technology, particularly top-down, global solutions that inform urban policy and rely too heavily on data. However, while smart cities are typically associated with surveillance, control and technological determinism – and many cities are still based on this approach – competing visions on what constitutes a smart city have also emerged.

In contrast, making a city playable is an immediate call to action for people – citizens, planners, players and makers. Playable cities (Nijholt, 2017, 2019) presented this alternative by being everything that the smart city was not. Smart cities operate top-down, playable cities bottom-up; smart cities are run by corporations and

operate within a framework of surveillance and control, and playable cities are led by communities and work with people and place. This approach includes location-based games (Leorke, 2018), cities as playgrounds (Stevens, 2007; Debord, 1967/1994), pervasive game design (Montola et al., 2009), the intrinsic value of urban play (Sicart, 2014; De Koven, 2013) and making infrastructure playable (Playable City, 2019). By being situated and embedded in the messy materiality of place, these approaches have led to shifts in spatial, temporal and social relations in the ways that citizens relate to the world. Criticism of playable cities draws attention to a lack of scale in their impact – the outcomes are often short-term custom projects – or the challenges in framing play for adults. However, their value as a strategy for engagement and dialogue with citizens has seen some smart cities adopt more playful approaches; the impact of playable cities in challenging the status quo has become clear through shifts in urban governance strategies.

Given this rise of interest in urban play beyond its intrinsic value, playable cities have influenced and changed the language and approach of smart city policymakers and developers. Smart cities are often classified into different types (Cohen, 2015), depending on their focus: corporation led and technologically determined with a top-down approach; city led with a focus on public infrastructure and improving services; and – seen as the most evolved or developed – citizen led with a focus on co-creation, engagement and participation. This last approach is the most recent to emerge and appears to have a lot of overlap with the playable city project. As a result, a binary relationship of either/or between smart and playable cities does not really make sense in practice. This introduces the risk of smart cities' co-opting and assimilating creative practice in playable cities or the instrumentalisation of play to solve problems of urban governance.

Urban play in practice

These contrasting and different positions for the city generate interesting debate, but what impact do they have on the city and its citizens? Perhaps there are spaces where they coexist. They may offer different modes of engagement in different contexts, but how does urban play work *in practice*?

In practice, urban play is hard work. It can be marginalised or trivialised – just a bit of fun – or forced to conform with quantifiable outcomes of function and efficiency that come with smart city approaches to urban governance. Urban play is a way to acknowledge, navigate and challenge these systems; its value is also as a methodology to explore and sit in multiplicity. Aside from its intrinsic value as play in itself, it may have a broader social and cultural value. Given the difficult place that urban play sits in relation to urban governance, what motivates people to work in this space? How does this work in practice, particularly across tensions that arise across civic identities that do not recognise the multiplicity of citizens that make a place?

A common governmental approach to urban play is to develop creative or innovation precincts with an underlying research and development agenda, describing urban policy in relation to using the city as a living laboratory. This can be

productive for creative research and game development in the city by opening up a common language for discourse and sites for playful experimentation. However, there still remains an issue as to the value of urban play and its instrumentalisation to solve a problem, act as a substitute for deeper engagement or to cover up social issues. As a result, urban environments remain contested zones with competing value systems that often don't recognise the role of urban play in public life and its impact on culture and society. This in itself is not an issue but an opportunity: if urban play is difficult to define and challenges the status quo without providing easily quantified results, this reinforces its role as a disruptive force for opening up discourse in public space.

Urban play can be social and performative, not only concerned with fun when playable cities are built on provocations and invitations for adults to play with and in their world. This type of play responds to and engages with the urban environment in meaningful ways by reframing, reimagining or renegotiating our relationship with our world. This blurring of boundaries has led to a renewed approach to playable cities as social frameworks that connect people, place, technology and code, prompting the need to revisit the relationship between smart and playable cities (Innocent, 2019a). In creative practice, this means looking for new ways to situate urban play: not reacting against technology but not being determined by it either. As a result, a different way of working with urban play in practice is needed: an approach that is interdisciplinary, embedded and situated and that takes advantage of qualities of play, such as its capacity to be disruptive, generative and connective.

In urban play, this situation is more complex in that it brings with it a number of other factors, such as the challenge of inviting adults to play freely by setting a frame for play in public spaces that are multipurpose and populated by a range of competing interests and conflicting frameworks. Urban environments have their own affordances and constraints shaping play, with different cities providing rules and structures that may be social or cultural or introduced by systems of governance. Further factors for consideration arise from the opportunities of technological platforms, particularly smartphones, in providing accessible and integrated platforms for play. Into this mix are introduced a number of different stakeholders who shape the role of these various factors based on their own interests and priorities.

As a result of all this, the urban play environment is a complex space to work with. It is a hybrid approach that is situated around poetic, situated relationships to infrastructure and draws on the central concept of making a city playable – that is, appropriating and reframing infrastructure to shift or change its meaning in the world. Urban play is an interdisciplinary conversation both in making the work through collaboration across landscape architects, game developers, public artists and designers and in situating the world in between and across the different layers of the city. This also means working with the capacity of the city to be networked and responsive to making the streets playable by engaging in narratives about the city itself rather than by introducing a completely constructed game world. It is blended and in dialogue with the actual world in situ.

Understanding urban play

Opportunities for urban play in practice exist in digital placemaking, experiences for reading cities, connecting people, facilitating civic conversation, platforms for digital sovereignty and citizen feedback and strategies for reimagining cities and approaches to co-creation. Given the scope of this potential, this again raises the question of the impact of play in cities. More specifically, what is the social value of play in cities? And how do we recognise the cultural value of play in cities? I argue that to do this we need to explore the diversity and range of urban play.

To explore this I introduce multiple lenses for looking at urban play, as a way to navigate its complexity and develop an expanded form of creative research practice for the design of games in this space. This approach draws on my own creative practice research (Innocent, 2015); time spent situating this practice in cities (Innocent & Leorke, 2019) such as Melbourne, Bristol, Dublin, Barcelona, Taipei, Singapore, Aarhus and Tampere; and interviews with creative practitioners working with playable cities. The interviews undertaken during a 2018–2019 City of Melbourne knowledge fellowship (Innocent, 2019b) were completed after formulating questions on my own urban play practice, particularly as it expanded outside of public art and engaged with a broader range of stakeholders and interests. In total, 43 interviews were completed primarily in London, Bristol, Barcelona, Copenhagen and Amsterdam, with some additional interviews in Birmingham, Canberra, Christchurch and Melbourne. Each interview lasted between 30 and 45 minutes, using the same set of 10 questions that focused on creative practice in playable cities and its relationship to smart city policies and open data platforms.

The selection of the interviewees was based largely on networks of creative practice situated around two residencies completed during the knowledge fellowship during 2018. The first of these was at the Watershed Pervasive Media Studio in Bristol, UK, during March 2018. Established in 2008, the studio connects artists, creatives, technologists and academics and is home to the Playable City Award, an annual commission that supported the development of playable city projects between 2013 and 2016. The second residency was based in the Institute for Advanced Architecture of Catalonia (IAAC) in Barcelona, Spain, during June 2018. IAAC is a research and education centre working across architecture, technology and society on programmes of social change and innovation, with a focus on cities and technology, including citizen science and experimental architecture. While three of the interviews took place in Australia and New Zealand, the remainder were based in Europe, so the data clearly do not include Australasian or North American perspectives. The main criteria for selection of participants in the study was to focus on those engaged in creative production or urban policy development, particularly either in relation to strategies that involved urban play by identifying them as working in playable cities or more broadly in relation to an intersection of creative technologies and play.

In developing this study, three qualities of urban play came to be recognised (Innocent, 2019a): its capacity to be disruptive, decoding and challenging existing urban knowledge, rules and systems; its generative quality, reimagining urban environments and creating new meanings and places; and its experience as connective, building or strengthening communities and people's relationship to place. These qualities will be explored in the next section from the perspective of seven lenses offering different views on urban play.

The seven lenses

Urban play brings into focus the city as a site for creative intervention. Whether this is approached by viewing the city as living laboratory, testing grounds in the public realm, experiments in urban governance or another model of practice, all the participants in the study are working in similar urban environments with shared challenges and opportunities. Each participant is looking at the same world through a different lens, bringing into focus what is important to their practice – they are all seeing a different city, whether that be playable, smart, creative, hackable or something else. As a result, while they may be playing together in the same city, opportunities for collaboration and exchange are diminished. Introducing a set of lenses aims to recognise the value of these different positions in providing a range of perspectives on cities as complex, layered, messy, contested spaces and to open up conversation across urban play as a fundamentally interdisciplinary practice.

The qualities of urban play are generally recognised by those working in the space of playable cities, but they are largely isolated in different circles of play: their motivations are different, as are the languages of urban play that they use in practice. There is no accepted, mutual understanding of the broader social and cultural value of urban play; people working in this space have different expectations of its impact on the city.

As a way to explore this space, the interview transcripts were analysed in relation to seven recommendations for putting into practice an approach for Melbourne to become a playable city (Innocent, 2019b). This approach is based on establishing an urban play community – that is, an interdisciplinary collective bringing different perspectives and expertise towards a common goal. The seven lenses resulted from this analysis, which – though not intended as definitive – are representative of an urban play community in practice.

The first lens is the *creative producer*, who typically operates from a background of arts and culture with a focus on urban play as spectacle, disruption or engagement with public space. The second is the *city planner*, often working within a smart city framework with operational issues and problem-solving as their focus. The third lens, the *gamer*, sits inside game culture and, while they may not need to be convinced of the value of play, differentiates between hardcore and casual play. The *technologist*, the fourth lens, bases their perspective on the city in code, rules, data and systems, with an interest in algorithmic play. The fifth is

Figure 5.1 An urban play community.

Source: designed by the author

the *citizen*, who is situated in urban life and how they interface with the city and who may be engaged by embedded or reflective play. *First peoples*, the sixth lens, bring unique ways of knowing, being and connection to place into urban environments. Finally, the seventh lens, the *artist gamemaker*, is interested in the city as a creative platform for play experiences. I unpack this further by exploring each of these lenses in turn, drawing on interview responses to build an overall picture of an urban play community.

Creative producer

The creative producer is popular in the diverse space of the Pervasive Media Studio, speaking to a role that is equally about producing a project and making the

necessary connections and translation across different disciplines and stakeholders to support and guide an artistic vision. They are playful and experimental, easily working with cities; however, they can also somewhat misunderstand game culture, because they may not have experience or background in this discipline. As a result, urban play is at risk of being simply a spectacle without deeper meaning or experience. Their performative and disruptive approaches have value in countering this, creating effective provocations and invitations for adults to play. These can often be bold or loud. This raises the question, what alternative forms of quiet, introspective play could there be in public?

This creative approach to urban play is characterised by Playable City Creative Producers International Sarah Brin's approach, who describes it as 'a perspective as opposed to a particular set of design qualities and thinking contextually in a space – whenever there is a system or a structure, there is room for play in it'. Laura Kriefman, director, producer and artist of Hellion Trace, is 'interested in changing people's relationship with movement in their city, by changing their movement, wayfinding and interrogation, usually by reframing existing and inherent patterns of movement'. Kriefman's view is that of the unique opportunity of work with the city as creative space, as a stage or set in which to situate experiences. Duncan Speakman, a composer, sound artist and director of Circumstance, is also interested in experience, saying that 'the lasting impact I'm really interested in is the way it leaves people with a mark of that experience . . . their engagement with that place is forever changed, in a way'.

Speaking about the Playable City project, Clare Reddington, creative director at the Watershed Pervasive Media Studio in Bristol, looks for patterns of play between cities. Using common urban infrastructure such as street lighting and post boxes as sites for urban play, she explains that

Shadowing and *Hello Lamp Post* are both very contextual and very specific to the place they are, and also very universal and able to travel. I think a strong piece of city-based work is able to tap into a narrative of a city and feel like it belongs specifically in the city rather than being completely untethered or unanchored, but also has the ability to travel.

She is speaking about two projects that have travelled to multiple cities and that overtly make infrastructure playable. For example, *Hello Lamp Post* allows players to talk to objects in urban environments via text message. Ben Barker, designer and founder of PAN Studio and cocreator of *Hello Lamp Post*, says that

the really fundamental thing you can do is change people's perception of space, so they think that they can play anywhere. You can play in an old dump or in a field – but it's whether you think you're allowed to play is what really matters.

These responses recognise the social value of play and the means to achieve that impact but also the complexities and challenges of working with urban

environments. In talking about their varied practices in a situated way, it becomes clear that place is central to this value, particularly the transformation of place for the player. So here the measure of social value is based largely on the play experience – what a particular player takes away from being drawn into urban play.

City planner

In contrast, city planners are interested in play in cities in order to understand or support rules and systems and support behavioural change rather than free play and urban exploration. Generally, their focus is on what play can do and what problems it can solve; their view of play is instrumental. With some exceptions, they are often not working with game designers and as a result not producing engaging play experiences that can lead to players' not perceiving these experiences as authentic games. However, an interest in productive approaches can lead to a focus on creative, generative qualities of play – what play can do, which may be balanced with its more intrinsic values. This possibility raises the question whether play can be embedded in urban planning processes or more generally in ways of making the city.

Matt Davenport, City Innovation project manager at Bristol City Council, is interested in this direction, by 'approaching it from a more serious angle . . . not that being playable or playful isn't important, but how can we use that to solve serious challenges that we face?' Director of Bristol Futures Stephen Hilton speaks to engagement and the strategic choice of projects, explaining that 'it is only really worked out through a more sort of creative, engaging approach, and for me that's where the playable city comes from. It's where you have your engagement . . . you're not going to engage people in a conversation about smart sewers'. There is a recognition of the value of engagement but also the need to arrive at a result, to achieve a goal or objective outside of the play experience itself.

There is some overlap here, depending on the culture of the city and approach of local government. Clare Reddington, for example, explains that Bristol has 'never bought a city OS [operating system], really, so where everyone was selling

them and continues to sell them without really knowing what they're selling them for, I think; Bristol said, "No, we're going to build our own OS, and it's going to be people-based"". Working in another city and place altogether, Hilary O'Shaughnessy, lead playable city producer, talks about her experience in developing work where 'everyone in Texas just drives everywhere all of the time, . . . so how do you puncture that experience? How do you get at them? What's public for Texas? And I don't know . . . I'm really baffled as to how you can make projects in Texas'. José-Luis de Vicente, a curator, writer and researcher based in Barcelona, introduces another perspective centred on digital sovereignty. He

would like to see how it has impacted on the fabric of the city, in the agency of citizens, which for the most part still relate to the city through proprietary platforms where intermediators have all the power' and how to measure the role and impact of 'tech companies, Internet companies, telecommunication providers, and infrastructure companies.

The potential for overlap between the instrumental goals of city planners and more open-ended goals of creatives is there, but a common set of values is not often in place, except in cities such as Bristol and Barcelona, where a dialogue is already taking place. Even so, it largely takes place on an individual project basis rather than as part of local government policy. Here the measure of social value is clearly measured using the systems of local government – placemaking audits, polls, surveys and data collection. It is likely that the value of play will be missed by these measures, and this omission highlights the need for new measures for its social impact and value.

Gamer

A gamer is simply someone who plays videogames, although they will usually have high levels of play literacy and recognition of the intrinsic value of play. In relation to urban play, they may see it as fringe activity, with their focus heavy on

game culture rather than the city itself. This can be seen in the design of location-based augmented reality games that tend to feature repetitive mechanics and narratives that obscure rather than reveal the city by imposing a game world on the urban environment instead of embedding or situating it (Leorke, 2018). Gamers often have good social networks, emphasising collective qualities that can translate to community values. A playful perspective also assists in alternative and imaginative perspectives on the city once framed outside of a closed game world. As a result, there is potential to explore approaches to pervasive game design, approaches that more deeply engage with urban environments and that reach a broader public audience.

This complexity of play is described by Simon Evans, a game designer based in Bristol and founder of zombie street survival game *2.8 Hours Later*:

one of my critiques of playable city, it's the idea that it's a machine, that it's knowable, it's controlled, that it proceeds according to a set of rules that are intelligible. I think it's a myth. I think the notion of the city as – the modern notion of a city is it's heterodox, hybrid, confusing, chaotic, anonymous, threatening, exciting, liberating.

Likewise, Simon Evans, Bristol-based game designer and director of Free Ice Cream, says that 'games and play are a methodology for a new kind of analysis of the space, for a new way of looking at the way we use spaces and own spaces', but at the same time 'we accept those rules without necessarily too much analysis . . . because they, in a quotidian way, fit into our lifestyles'. As a result, ordinary things can 'become exceptional when you try to implement them in spaces that don't allow those kinds of behaviours'. Both designers are speaking to a more complex, nuanced language of play but working in the space of playable cities, translating their work into existing urban environments and social structures – all while they also make good games.

Speaking to appropriation, Seth Giddings, academic at the Winchester School of Art, University of Southampton, thinks that

more of a challenge would be to have invitations to play that are more sustainable . . . that may be more built into the fabric, social and urban fabric, and that don't necessarily need roads being closed off or lots of attention and tickets and so on.

Developing patterns for game design that are embedded in daily life and still recognised as games is a challenge, although play is already present in daily life even if not often visible. Zuraida Buter, playful culture curator and cofounder of the Playful Arts Festival in 's-Hertogenbosch, says about play that

the government is doing smart cities and big companies are working on smart cities all in their own way, I think playfulness could actually be helpful to

make it better for citizens . . . than just these big top-down things. I think playfulness is more bottom-up, and I feel that there is lots to gain there.

This approach is shared by Laura Kriefman, who looks for simple invitations to play

that responds to that environment or to that object? What's the action we instinctively want to do, and how do you reward that? So that's probably where I start from when I'm thinking about invitation, and I try to do stuff with as few barriers as possible, often embedded in physical environments.

Making games that are embedded in daily life and that work with existing social and cultural norms but that also speak to existing play literacies and expectations of games is a significant creative challenge. The social value of play for gamers comes from the recognition of urban play as a game: as a worthy challenge and experience in itself in contrast with any larger impact on culture and society, although that may be recognised later. Creatives working in this space seem to recognise this challenge, often talking of the shortcomings of existing projects – many of which may be prototypes or works in progress – and of larger games that don't engage with place, trying to find a space in between where games as entertainment and serious urban play may coexist.

Technologist

Technology experts are in a unique position in that they have access to infrastructure and data and have an understanding of the potential and limitations of these systems. However, their focus can be too technologically determined, as is typical of the smart city approach, seeing these systems as solutions in themselves rather

than as mediators. This is reinforced by corporate or government-driven agendas leading to top-down approaches. Often, code literacies allow insight into urban processes, rules and systems that can also challenge technological determinism as the flexibility of systems comes into focus alongside their real-world effects. When we work with a technological lens, can we find ways to situate and play with data in everyday experience, allowing insight into actual processes of the city?

Particularly when talking about public data, issues of privacy and access are quick to arise, as highlighted by architect, strategic designer and curator Giovanna Carnevali, who asks ‘who is going to manage the data? If it’s the city council it’s still fine, because . . . it’s a public organism that is making the public interest for people’. These issues are also at stake in playable cities. As artist and researcher and the professor of City Futures at UWE Bristol Teresa Dalton states, play ‘can sweep under, in a sense, some of the issues around privacy, ethics, responsibility that are happening and somehow the word “playable” doesn’t address those quite difficult and problematic things that are kind of happening when we talk about smart cities’.

Intent is central to working with technology, as play scholar at the IT University Copenhagen Miguel Sicart explains:

Playable cities, in my opinion, should be those cities that identify [playful] behaviours and know how to leverage digital technology to empower those behaviours and particularly to make them inclusive rather than exclusive. . . . That’s the ideal of a playable city: one in which technology is deployed for inclusiveness through play.

An understanding of the impact and use of technologies is also important to Mathilde Marengo, architect and head of studies at IAAC in Barcelona, who emphasises that

it also needs to be able to translate the things that we as architects, as urban planners or in other disciplines, as infrastructural engineers or whatever, know or understand – we need to be able to translate that to people who don’t necessarily have the same background as we do, and that can be also cultural content.

Playable cities are a potential framework for bringing these ideas to the surface, as Michiel de Lange, cofounder of the Mobile City project at Utrecht in the Netherlands, says: ‘I do feel that there is also this more adversarial, critical potential of play, because it really undercuts the basic foundation of rudimentary embryonic smart city thinking, which is very knowledge-oriented’.

Imaginative and critical ways of looking at the value of technology in cities beyond raw data collection is important in also making arguments in their use in urban play and social value more broadly. Concerns around surveillance and

privacy are well founded and easily overlooked when embedded in the abstraction of a system, whether that system is collecting pedestrian and traffic data or optimising waste collection and other urban flows. There is value in making these systems relatable, tangible and visible, and urban play could provide frameworks for this, and access to these systems also offers creative opportunities for game design and critique.

Citizen

Framing people as citizens rather than as players or just people brings a pre-existing set of values to their relationship to the city. Depending on their way of being, they may, or may not, be embedded in the experience of the city. However, play may be seen as a distraction or in some cases a decoy introduced to cover up issues in public space rather than to address them directly. Usually, citizens are invested in the city and their place in it and may be more reflective as a result, though the opposite may also be true with some urban environments, fostering alienation and disconnection. Citizens are not always gamers, so they have new perspectives and may be open to hybrid approaches and less concerned about overtly game-like experiences. For citizens, can we find ways to embed games and play in the daily life of the city? Returning to the challenge of making meaningful play experiences is equally relevant to making infrastructure and technologies tangible and understood to citizens in this scenario.

This has become the focus of playable cities, and Clare Reddington said in response to the perceived convergence between smart and playable cities ‘I think there’s just cities, and I think smart cities is like an imaginary construct of some

industry, in that I think that Playable City is less about technology and more about citizen engagement now'. Reddington continued: 'it's socially engaging. . . . You can make something around the spectacle itself. It's permanent – thinking around relational aesthetics, the spectator and the actor . . . having that social boundary around a thing where people feel comfortable to play'. Both approaches speak of activating and connecting people with a place, engaging with them in a relational way as a citizen through the urban environment rather than overtly identifying them as such.

Connection and empowerment are also key themes, as Holly Gramazio, artist gamemaker and director of *Now Play This* in London, explains:

We mostly only play when we feel at home and safe somewhere, and so if we play in a city, because our bodies and brains are stupid, we get tricked into feeling more at home and safer. We feel more like a place belongs to us when we've played in it.

Artist-theorist, curator and the director of Furtherfield Ruth Catlow expands on this theme:

at its best, the idea of playable cities is allowing people to feel that sense of freedom, meaning creation together, connecting with people who they might not otherwise connect with, and those opportunities are the things that allow people to actually feel safer . . . to feel like they have more room to kind of take control and to be empowered in the spaces.

Urban play gets to the core of what it means to be a citizen by situating games in the city, both digitally and materially, and across other layers in between. Sicart asks a more fundamental question, again speaking about appropriation:

My question is always what is a playable city for a citizen? Like, how do people who live in cities define their cities as being a playable city? And it is my intuition that the cities are already playable in a way, that people engage in play behaviours that are not necessarily those that we try to impose from the outside.

Citizens are already in a set of relations with the city, and urban play can reframe those relations, opening up conversation and the potential for connection. Their city already has social value for them; the question is the extent to which urban play offers ways for citizens to engage and reconnect that are not contrived or spurious. Themes of reimagination and discovery are key, since to find something new about or see positive change happen in the place you already live in is more likely to create connection than is a game world unrelated to the city in which it is situated. The social value of urban play for citizens is closely linked to how they feel, understand or experience their city and to the role in which they may play in its growth and development.

First peoples

Indigenous ways of knowing, being and connecting to place offer completely different frameworks and approaches to urban play. However, their voices are often excluded from urban play or erased from cities either deliberately or through a lack of recognition. In Australia, Indigenous peoples have a unique connection to place: before colonisation, they cultivated and managed what is described as the ‘biggest estate on Earth’ (Gammage, 2012). These cultural and social values in relation to land are still central to their living culture today, and stories about place could lead to new knowledge in urban play with respectful consultation and collaboration with Indigenous peoples who may wish to share this knowledge.

As a result, new ways of being and connecting to place may lead to opportunities for the generative and connective aspects of urban play. We can develop approaches to urban play that are informed in deep ways by Indigenous ways of knowing and connecting to place. Currently, cultural consultation and engagement with elders is underway to explore this question, with a playable audiowalk prototype testing the concept (TiMER Audiowalk, 2019), developed with Boon Wurrung elder N’arweet Carolyn Briggs. It is important not to recolonise these spaces and equally important to invite Indigenous peoples to conversations on urban play, seeking a reconciliation of ancient knowledge in a contemporary context that renews and revitalises the living culture of the Boon Wurrung and other nations in precolonial Australia.

These perspectives also offer ways to reframe pervasive games theory and design as they are situated in ways of being and perspectives on the world that challenge underlying assumptions around the urban design and values of cities themselves. Drawing on Indigenous cultures from South America, Danowski et al. (2016) presents a post-Anthropocentric world view situated in this unique

perspective. Working through a range of positions, they arrive at positive and radical reimagination of the world as a productive act of the invention of culture and technology after the ‘end of this world’, demonstrating that the cosmologies of Indigenous peoples and their own experience of apocalypse through the destruction of their cultures place them in a strong position to inform this process. Drawing on this radical but creative position is also productive in urban play that seeks to reimagine, renegotiate and reconnect with the world.

Artist gamemaker

Interested in experimental game design and its expressive potential, artist gamemakers are fluent and invested in exploring urban play, already convinced of its social and cultural value. However, their work is often not recognised by cities or given institutional support. As a result, many play experiences may be temporary or limited in impact. Furthermore, despite working with game development as a creative practice, their work may be perceived as separate or marginal in relation to the mainstream games industry, due to its experimental nature. Due to this movement away from games purely for entertainment, their work often captures three qualities of urban play introduced earlier: as being subversive, generative and connected. Given this potential impact, how can experimental forms of urban play – and more diverse forms of play – be scalable – that is, reach a larger audience and be semi-permanently embedded in urban life?

Chad Toprak is an artist gamemaker and curator and the director of the Freeplay festival in Melbourne. Speaking about Hovergarden parties, he explains that

we pick open public spaces for several reasons. One is obviously we believe that the public belongs to the people, and that we want to see more people play, but also because we're showcasing a very particular type of game, a

lot of independent games, experimental games, and we want more people to know about them.

The artistic director of Coney, Tassos Stevens, talks about the creative process with

these kinds of tools that you can make something just quickly and immediately and easy for people to play with, they're the exciting ones. . . . you could make something which people could – having been through the experience . . . help stitch some of the impact that you might be interested in back into everyday life.

Experimental practice in public space is important here to test the response of urban play to particular environments, situations and communities.

This approach is also important to Matt Adams, artist and cofounder of long-standing artist group Blast Theory, who defines

playfulness [as] an inherently chaotic and disruptive presence in the city and in human life generally . . . so to sort of explore the idea of playfulness in a city is almost always to contest what can be done in certain places and who can do it and under what circumstances.

This disruptive and generative power of urban play is also recognised by José-Luis de Vicente:

the playable should be the non-predictable, non-optimised, non-linear kind of serendipity-driven experience of the city, and the smart is the effective, efficient, optimised version of the city, so let's pump up the serendipity and let's try to focus less on the predictable to capture a little bit of that situationist possibility and space of the city.

Sicart extends this creative potential to the connection of people: 'play is a way of creating – play is also used as a way of creating cohesion within communities and creating communities out of scratch'.

In the creative community, the social value of urban play is widely recognised, but translating this to a broader range of communities and stakeholders invested in the city remains a challenge. The work of artist gamemakers is often underfunded and unrecognised, making it difficult to build momentum or move beyond small-scale prototypes, despite an inventive and diverse range of work in this space. Connecting this work to others – without compromising or instrumentalising it – is a challenge for playable cities.

Reflections on urban play communities

Different value systems for urban play exist, although overlap between the various lenses has been demonstrated, which points to areas of mutual benefit.

A connected urban play language is needed to allow this conversation to happen. This would recognise the diverse range of different types of urban play and break down boundaries through interdisciplinary methodologies and processes. Through this more coordinated creative effort, urban play experiences could be more deliberately situated in relation to its disruptive, generative and connective qualities. An approach to set this in motion is based around community: not communities in cities but urban play communities that are actively working across the more difficult conversations and collaborations for mutual benefit.

Urban play communities share knowledge and resources around playable cities. They are diverse and interdisciplinary, connecting live art, computer science, ethnographic research, game studies, landscape architecture, local government and cultural institutions. Dialogue and conversation in urban play communities is practice based – that is, focused on making urban play in cities, however much their motivations for practice come from a diverse range of starting points. Both gamers and artist gamemakers start from a position that recognises the intrinsic value of urban play but focus on different types of play experience. City planners and creative producers work in public spaces and seek engagement but for different reasons – solving problems versus asking questions, for example. Citizens are curious and open to play but also simply seek connection with their city. Technologists offer solutions to citizens, but not always engagement or connection. Indigenous peoples have knowledge to share but are often not given a platform to share or connect that knowledge. Frameworks to connect and collaborate across these different circles of play are critical to successful urban play communities.

A way forward is through recognising not only the social and cultural value of urban play itself but also its inherent diversity. Forms of urban play – through affordances of the built environment and social structures; through appropriation; or by introducing technological infrastructure, on the small screens of multiple smartphones or via the development of games and playful encounters that are situated in public space – already coexist in the same place, experienced by the same people. Like the design and development of videogames, interdisciplinary methodologies and processes are needed to engage with this particular type of practice, to break down boundaries between disciplines, and these have two decades of work in this space to draw on. Urban play communities that engage with local government and industry may introduce play into policy, or pervasive play in everyday life may retroactively gain recognition in urban governance. It is clear that urban play has sociocultural value in cities; through the agency and activity of urban play communities, this can gain broader recognition and understanding in strategies for urban governance.

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6 The postdigital playground

Children's public play spaces in the smart city

Bjørn Nansen and Thomas Apperley

Introduction

This chapter explores the intersection of digital technology and children's public play spaces, in which the historical distinction between the digital and the nondigital is increasingly blurred through mobile, locative and ambient media. The integration of playgrounds into digital infrastructures fits along a broader trajectory of smart city technologies, in which urban space is becoming digitised and 'sentient', embedded with digital media and networked communication infrastructures that are reconfiguring the operation and experiences associated with various spaces of public life (Gabrys, 2019; McQuire, 2017; Shepard, 2011).

The question of how this integration into the smart city is playing a role in reconfiguring the spaces, experiences and meanings associated with public playgrounds and children's play practices remains a largely unexplored topic. In contemporary discourse, the positive associations of public play in the playground are often contrasted with solitary and sedentary behaviours associated with indoor digital play and screen time. Here outdoor play often enters the discussion as a way of getting children away from the screen (e.g. Mavoa et al., 2017). Yet children's presence in and movement through public space has declined in many parts of the developed world (e.g. Garrard, 2009; Hillman et al., 1990), where public play has often been reduced to designated safe spaces, such as playgrounds (Valentine, 1997; see also Lauwaert, 2009). This circumscription of children's participation in public space aligns with broader shifts in the Western cultural construction of childhood and in the governance of children's play (Malone, 2007), and it is attributed to a wide range of factors that reflect changes in built environments, social norms, parental concerns about safety and evolving practices of technology use. This chapter asks, what is at stake for children's play culture when children's play in public spaces is in increasingly dense ecologies of digital media infrastructures and practices?

A prominent way that children's public play spaces are integrated into the infrastructures of the smart city is through the widespread and often-incidental use of personal mobile devices in children's public play spaces. However, they are also increasingly subject to more-deliberate design interventions that aim to embed or augment children's play spaces with digital sensors, interfaces and software applications. The steady accretion and dispersal of media throughout

home environments has already created dense household ecologies of media. These ecologies have become further intensified through emerging technologies in which computation and play spread beyond the screen through Internet-connected toys. In game studies, this has been described as a postdigital phase of play, wherein play is no longer a singular activity contained by one digital device at a time (Giddings, 2014; Jayemanne et al., 2016; cf Tyni et al., 2016). Broadly, the postdigital describes a moment when ‘the historical distinction between the digital and the non-digital becomes increasingly blurred . . . [and] computation is part of the texture of life itself which can be walked around, touched, manipulated and interacted with in a number of ways and means’ (Berry, 2014). In terms of play in public spaces, this notion connects neatly with changing infrastructures, devices, software and connectivity, creating the possibility for activities that are at once analogue and digital, virtual and actual, technical and affective, narrative and playful.

The postdigital situates the integration of playgrounds into digital infrastructures in relation to the broader impact that such technology has on public space and on the blurring of boundaries of digital and nondigital play in children’s domestic space (Giddings, 2014; Nansen et al., 2019). Through these contexts, we further develop the concept of postdigital play (Jayemanne et al., 2016) and apply it to an analysis of two recent examples of interactive play designs that aim to augment children’s public play spaces: HybridPlay and *Disney Fairy Trail*. These examples of postdigital play in public playgrounds are analysed in terms of their functionality, representation and online reception. Operating along a broader trajectory of smart city infrastructures characterised by the blurring of discrete spaces of sociality, these examples of postdigital play highlight tensions associated with the cultural sensibilities and historical meanings attached to public play spaces, digital technologies and childhood.

The digitisation of public spaces

To understand how digital technologies are reconfiguring playgrounds and children’s play therein, mobile phones must be considered in a broader ecology of urban media involving technical infrastructures, devices, networks (Wi-Fi, near-field communication), software applications and increasingly a world of interconnected things, referred to as the Internet of Things. While mobile technologies have ‘profound implications’ for ‘our perception of space’ in a general sense (de Souza e Silva, 2013, p. 118), in relation to the playground, the intensification of digital media in the city challenges everyday use and understanding of play in these sites. Existing research has fruitfully explored the reappropriation of the city for playful purposes through location-based games and social media (e.g. Hjorth & Richardson, 2017; Leorke, 2018; Moore, 2015). Yet as mobile devices and the accompanying media ecology reinscribe play and playfulness in everyday urban spaces, the question of how this affects environments that have been specifically set aside for the play activities of children has yet to be addressed.

The concern of this chapter is to understand the implications that these processes have for the specific place-based qualities of the public playground, which have been historically and culturally understood as spaces that are set aside for play. Public playgrounds, which grew in number and popularity in the early 20th century, were from their origins associated with children's safe outdoor recreation and physical health (Frost, 2012). Over time, the public playground familiar to us today, composed of standardised commercial play equipment in fenced or segregated areas of public parks, emerged as the dominant form (Erickson, 2011). There are historical movements and differences in the politics and designs of playgrounds, including more unfinished adventure playgrounds (Shier, 1984); more child-focused participatory playground designs (Whitzman et al., 2009); and the development of private, indoor or commercial play centres that commodify play. But these spaces nevertheless have a common goal: to foster children's engaging in active, safe and physical play, in light of the history of the playground as a site set aside for the explicit purpose of children's active, safe and social play.

Children's public space is, like in many other contexts, predominantly integrated into everyday digital infrastructures through the widespread and often-incidental use of personal mobile devices in children's public play. The use of mobile phones in such contexts also operates in the broader arrangements of mobile and intimate parental surveillance (Leaver, 2017). Yet there is little research explicitly investigating how mobile devices are used in children's public play spaces. More broadly, research explores the role of mobile technologies in mediating children's mobility and movement in public space, emphasising the surveillance capacities or functions of communications technologies and how they reinforce parental fears and anxieties (e.g. Malone, 2007). Other research is more ambivalent, highlighting how the affordances for surveillance are countered by the importance of mobile devices for extending children's public geographies and spatial mobilities (e.g. Nansen et al., 2017; Pain et al., 2005). Complementing this focus on the child is a growing body of research emphasising the social and health risks associated with *parental* phone distraction (e.g. Radesky et al., 2014). Research in playgrounds addressing the impact of mobile phones on adult-child relationships emphasises the potentially negative consequences in terms of distraction, social distance, safety and behaviour modelling from parents (Hiniker et al., 2015). This research needs to be extended to explore how both mobile media and digital media devices and software more generally now operate as part of the infrastructure of social relationships, communication and play.

In contemporary imaginaries of childhood, playgrounds often serve as the antithesis of screens, and yet mobile media operate to spatially extend existing parental concerns about screen time (Haddon, 2013). Playgrounds are thus positioned as a 'natural' resource for parents or guardians who believe their children need time away from screens because they are spending too much time engaged with media. The penetration of mobile media infrastructures into playgrounds disrupts this understanding of the playground as a site that is 'unmediated'. Restricting children's use of mobile devices in such spaces, however, overlooks the ways that public spaces like playgrounds are already connected to a wider mobile media

infrastructure and the ways that existing mobile phone use among parents and other supervising adults remediates the playground.

The recent public integration of sites in parks, including children's playgrounds into the digital infrastructures of *Pokémon GO* (Niantic), highlights the potential tensions of the postdigital playground. For the everyday spaces of the city, the augmented layering of the *Pokémon GO* app reciprocally maps digital onto place and transforms banal and familiar surroundings, creating new opportunities for and politics surrounding ambient social play (Apperley & Moore, 2019; Hjorth & Richardson, 2017). But in spaces set aside for children's play, *Pokémon GO* can create an unwelcome intrusion. In the weeks after its release, the rapid uptake of the app meant that public spaces with access to key game infrastructure (known as PokéStops and Gyms) were often crowded with players. For instance, in Tampere's Pikku Kakkonen, a large public playground near the city centre, the impact of the hordes of players entering the park to access the multiple PokéStops located there was felt profoundly by families who used the facilities.¹ The Visit Tampere website retains a warning for *Pokémon GO* players: 'Poke Stops [*sic*] at Pikku Kakkonen playground are inside the playground, but you can get to them going around the park – you don't have to go in disturbing kids' play'.² This issue, which affected Pikku Kakkonen, illustrates how the installation of augmented ambient play in everyday urban space, which reconfigures the environment into a 'playground' for mobile device users, comes into conflict with the perceived values of play that are embedded and enacted in a discrete playground location.

It would be reductive to treat digital media as simply intruding on or negating play, as mobile media and devices can also encourage creative forms of play. Children's public spaces, including their street cultures and playground play, have always been sites of mediation in which playful practices borrow from cultural and media resources, such as stories and characters, to shape play activities (Factor, 2004; Opie & Opie, 1969). Mobile media extend these traditions with, for example, children integrating media-based Pokémon play resources such as animations, collectable card games and videogames into the structure of their spatial practices and daily routines, effectively interweaving their homes, local shops and neighbourhoods with the Pokémon universe (Horton, 2012). Giddings (2014, 2017) argues for understanding this mediated play as a form of 'distributed imagination' that is both technosocial and collectively realised, drawing seamlessly on both physical environments and imaginative interpretations. Play thus actively recruits materials from the mediated worlds of children, whether media technologies are old or new, absent or present.

Postdigitality and continuous interfaces

The digital augmentation of children's playgrounds and public play spaces is only one example of a larger trajectory of digital and postdigital spaces of play. Augmentation has affected the reimagining and transformation of numerous sites, including family homes and city streets. Yet the disjunctions and seams of digitally augmenting an everyday environment associated with specific cultural and

historical values of play are revealed in the contemporary playground. Here the idea of the continuous interface is helpful for highlighting how such reconfigurations of the postdigital have implications for embodied experience, media economies and social relations in the city:

The interface as a thin membrane over computational devices is increasingly being stretched across computational devices, objects, practices and processes to create what I am calling *continuous interfaces*.

(Berry, 2014, emphasis added)

The messy postdigital hybridity of real and augmented realities also raises crucial questions for the current and future uses of playgrounds, parks and other dedicated play spaces.

In a postdigital environment, play multiplies across digital infrastructures and environments, and media companies are thus incentivised to broaden their interface ‘envelopes’ (Ash, 2015) to use continuous interfaces to capture increasingly unruly and transgressive forms of digital/physical play. Examples of commercial products that seek to recapture play practices that spread beyond the screen include a range of what have been referred to as Hybrid Playful products (Tyni et al., 2013) and include well-known commercial products like *Disney Infinity* (Avalanche Software) and Nintendo’s Amiibo figurines (Nansen et al., 2019). These products incorporate tangible elements such as figurines into the screen-based play space by using communication protocols, near-field communications and radio frequency identification tags to connect the physical and the digital. In doing so, products like Amiibo not only solicit playful practices that cut across physical objects and digital spaces but also operate to envelop children in Nintendo’s ecosystem and the increasing datafication of play, enabled through the software affordances of the figurines, which are capable of storing data corresponding to personal game experience and progress.

These games and playful devices are part of a broader reconfiguration of material and digital elements in computers that are increasingly mobile, ‘pervasive’, ‘locative’, ‘augmented’ and ‘mixed’ (Montola, 2011) and that are often described through the language of the Internet of Things (van Kranenburg, 2007) and its toy-based variant, the Internet of Toys (Holloway & Green, 2016). They can, however, also be characterised as part of a broader regime of postdigitality, in terms of gaming that is continuous with the digital yet that also exceeds the digital through conditions that are technical, historical, aesthetic and affective (Berry, 2014; Schinkel, 2014).

The extensive patterns of player bodies and data captured by postdigital games represents an ‘aesthetics of recruitment’ (Jayemanne et al., 2016), in that they enrol and assemble diverse play practices, spaces and data in novel but often-unstable arrangements. In doing so, they extend and intensify trends identified in digital homes research, which reveal how mobile devices and infrastructures in homes blur what were previously distinct and dedicated spaces (e.g. bedrooms) or times (e.g. family meals), to become sites of potentially continuous digital

mediation (e.g. Nansen et al., 2009). These remediated spaces, as with digital play products in the playgrounds of the smart city discussed later on, are accompanied by contradictory forms of reception: some celebrate possibilities for new kinds of digitised social interaction, while others repeat concerns along familiar tropes about the erosion of family interaction and relationships.

Just as we are seeing digital transformations in domestic spaces, the emergence of interactive playgrounds reflects some broader movements occurring in the landscape of the smart city. The vision of the smart city is typically a part of an ecology of digital infrastructures, IoT technologies, embedded sensors, mobile devices and location-based technologies or services that produces the city as a continuous interface of data collection, networked connectivity and urban operation management (e.g. Shepard, 2011; Greenfield, 2010). But as the postdigital highlights, such aggregated configurations often overlook the particularities of urban politics, materialities and experiences in which the ideal of seamless interconnectivity operating at the scale of the city through the aggregation of individually connected devices in a system of real-time data processing treats the diversity of urban places as a homogenous, smooth space of computational operation. Critiques of the smart city build on such theoretical resources to highlight contradictions between, on one hand, visions of technologies working together to function consistently and uniformly and, on the other, cities, which exist as collections of various geographies, social milieus and inhabitants (e.g. Greenfield, 2013).

In smart city visions that privilege technologised spaces, privatised infrastructure and 'citizens' that are assumed to be professional, technologically literate and able-bodied adults, specific public sites like playgrounds or disenfranchised inhabitants like children are often overlooked. Nevertheless, the intersection of digital technologies and public spaces may also be harnessed otherwise, including for playful purposes (Greenfield & Shepard, 2007; Leorke, 2018; Nijholt, 2017). Here the appropriation of digital technologies and of data in the city offers opportunities for reimagining and reshaping public spaces towards playful purposes and applications. The development of playful ways to augment public spaces with digital technologies has been promoted through various playable city movements, including Bristol's well-known city-branding project, which aims to bring art, technology and culture together through interactive design projects to enable playful digital layering or interactions with places around the city.³ Yet the city as a continuous and playable interface is evidenced by a range of other commercial, government and independent projects, including more structured gameplay, such as the augmented reality massive multiplayer online location-based game *Ingress*, which connects to a longer history of locative media and play (Moore, 2015) and to more temporary and experimental projects, such as embedding urban furniture with affordances for digital annotation or communication (e.g. Nansen et al., 2014; Nijholt, 2017).

Examples of playing in the smart city speak to a broader trajectory of blurring of the historical distinction between the digital and the nondigital. Such post-digitalities, however, potentially open up new points of affective disjuncture, disruption and disillusion. Although there are clearly endeavours to reimagine

and reshape public spaces through playful interactions or communication, the implications for children's public play spaces – such as playgrounds, which are already associated with specific values of play – remain underexplored. How are postdigital imaginaries, products and practices received in terms of the social meanings and values associated with the functions of children's playgrounds, and what role if any should digital devices play in these spaces? Two examples of augmented and interactive play technologies, HybridPlay and *Disney Fairy Trail*, are analysed next, in terms of their functionality, representation and online reception, to explore how these often-contradictory sensibilities unfold in relation to the configuration of and meanings associated with children's public play spaces. These sensibilities, as we elaborate in the following section, sometimes reinforce, sometimes remediate and sometimes reject the dominant discursive framing of children's public play spaces or children's digital media.

Case studies of digitally augmented children's play spaces

In addition to the use of mobile phones in mediating children's public spaces and experiences, there are more-deliberate design interventions emerging that aim to embed or augment children's play spaces with digital sensors, interfaces and software applications. Here the potential of the Internet of Things operates in combination with a logic of technology innovation in imagining and designing 'interactive playgrounds' (Poppe et al., 2014), to transform children's physical play spaces and activities. Digitally augmenting children's play spaces is imagined in these contexts as a way to provide more-engaging, more-entertaining and more-immersive play experiences while also promoting physical activity, social interaction or inclusion. Soler-Adillon and Parés (2009), for example, report on their interactive playground project, the Interactive Slide, in which a large inflatable slide augmented with an interactive camera-projector acts as an image projection screen, and the projector includes motion-detection sensors to transform the slide into an interactive surface (2009). The Interactive Slide, then, becomes a platform for game designers to develop different applications and experiences. An initial application was the *Virtual Mosaic*, a *Tetris*-inspired game that projected coloured falling squares onto the interactive surface of the slide, which could then be touched or moved or even scattered by sliding down the slide.

Commercial examples of physically embedding sensors and digital interfaces into playgrounds are growing,⁴ though they remain at this point relatively rare; they mostly exist as lab-based prototypes rather than real-world applications, owing to issues of cost but also durability, vandalism and maintenance. There are, however, emerging interaction design prototypes and software-based products that take advantage of smartphone location-based functions, built-in sensors such as accelerometers, near-field communications such as Bluetooth and the possibilities of connecting mobile devices to a range of peripheral hardware. These offer opportunities for augmenting play spaces without requiring the complete redesign of play equipment or infrastructure.

The two cases studies of augmented and interactive play technologies, HybridPlay and *Disney Fairy Trail*, were analysed in terms of their functionality, representation and online reception. The functionality analysis of the technologies drew on platform and affordance study approaches to unpack their operations, features and technical mediation of public space. The representation of these designs was analysed by drawing on corporate promotional and marketing material to investigate how the scenarios and contexts of use for each game was discursively constructed for consumers. The public reception of these media technologies was analysed through available online data collected across social media platforms. The number of posts and comments collected totalled almost a hundred. For *Disney Fairies Trail*, public responses were collected from posts, comments and content shared using keywords and hashtags (e.g. #disneyfairytails) across Instagram, Pinterest, Facebook and Twitter. For HybridPlay, public comments and conversation threads were collected from online spaces – though these were less from social media platforms and instead more commonly found below the line on news and tech journalism articles and on blogs and crowdfunding sites. These public comments were identified, collected and analysed across both case studies to gauge the public response to postdigital interventions into children's public space.

Disney Fairies Trail

In 2015, Walt Disney Company (Australia) partnered with the Royal Botanic Gardens to develop and install the *Disney Fairies Trail* experience (the Creative Shop), an augmented reality application that allowed children to find, collect and fly fairies such as Tinkerbell and her friends from the *Disney Fairies* movie franchise in a number of public parks in the urban centres of Sydney and Melbourne. The downloadable app worked on Internet-connected mobile devices and geolocation technology, and guided by a digital map on the mobile screen, children searched for fairies in the gardens, which appeared as animated characters overlaid on physical places, with the augmented reality content activated by the app receiving push notification from beacon technology on the location of the user in the gardens and their proximity to each fairy hiding place. The *Disney Fairies Trail* experience was launched as a temporary installation as part of a school holiday programme of events, using a commercial entertainment brand to promote engagement with and education about the natural environment. As a commercial partnership between an entertainment company and a public nonprofit institution responsible for botanical conservation and education, the full title of the installation, the *Disney Fairies Trail: Magic in our Natural World*, speaks to the multiple hybridities of the application: public–private, commercial–educational, digital–physical, mobile–located and natural–magical, which were at once elided and celebrated in the marketing representations:

The *Disney Fairies Trail* showed thousands of children the true magic of our natural world. The partnership reinforced brand recognition and values while

fulfilling key social responsibility and education objectives for the Walt Disney Company in Australia.

(The Australian Botanical Garden,
www.australianbotanicgarden.com.au/)

Apart from promotional material from the corporate developers, designers, sponsors and parks, there was surprisingly little public communication about this mobile app and its digitised experience of public place. Of course, this research looked only at public communication online and so did not include private communication on messaging applications or social media networks. But given that this was an overt commercial branding of a public space; that it was an explicit digital re-mediation of what is otherwise a 'natural', if constructed, physical setting; and that the claims to supporting curiosity, engagement and learning about the natural environment were somewhat murky and tenuous, there was surprisingly little negative reaction to this application.

Instead, most of the public posts and discussion revolved around enjoyment, with images of the app and experience shared on Instagram or conversations anticipating and planning when to go and whom to take, especially as an activity to entertain children during the school holidays, and suggesting the experience to friends:

How cute
The kids would love this
We are planning to go, so definitely would love to join you!
(public Facebook posts)

Critical reactions to the fairy trail augmented reality app revolved round much-more-prosaic complaints and in particular difficulties getting the application to load or function properly, along with other less-relevant complaints, such as the poor quality of coffee available at the site:

It won't let me download the app on my iPad stupid thing
Yeah I had probs with mine at first but the guy in the office had a
troubleshooting sheet! Just had to fiddle with some settings . . .
That would have been helpful!! We were with people who had a working
app so we just looked at the fairies through that.
(public Facebook posts)

In considering how this postdigital intervention into public space was received in terms of social values and sentiments associated with either public parks or digital devices, the analysis of public online comments revealed almost no sense of this hybridising as unsettling, as transformative, as exceptional or as corrosive. Instead, it was seemingly accepted as a novel but relatively familiar piece of entertainment and as a holiday activity aligned with the experience of the everyday. In many ways, this is probably not surprising,

given the context and functionality: this was a temporary application that is reminiscent of many contemporary museum and gallery exhibitions; it was deployed as a mobile application involving commercial content and technical features familiar to many parents of young children using tablets and smartphones; and it was installed in a public park for only a brief period in a manner that was not visually obtrusive or physically damaging. The negative comments primarily involved highlighting the relative complexity of operating the app, which meant children could not simply ‘play’ it seamlessly without adult support. Such a concern is worth exploring more fully, because it suggests that there is also a literacy dimension that shapes the experience and reception of this kind of postdigital intervention. However, primarily due to its temporary and clearly bounded implementation, this project did not make a significant challenge to the everyday cultural sensibilities associated with children’s parks, play or use of digital media.

HybridPlay

HybridPlay, a crowdfunded app, is more directly oriented towards reconfiguring the ways public playgrounds are used and conceived. HybridPlay (lalalab) is a mobile gaming system that incorporates sensor hardware with a smartphone game platform (for its history of design and a technical description, see Díaz et al., 2016). The hardware is a sensor clip made of rubber with built-in sensors, including accelerometers, gyroscopes and proximity sensors, and this chip is designed to be attached to different pieces of playground equipment (see Figure 6.1). The clip wirelessly connects to a smartphone to incorporate movement from the sensor as a physical game mechanic in mobile app games and the digital play space of the screen. An example of a HybridPlay game is *Space Kids*, which uses the sensor attached to swings or a seesaw to physically control an astronaut character onscreen that is navigating in and through space. Designed and developed by a team of Spanish new media artists, designers and programmers, HybridPlay is informed by the philosophy of the open-source movement – it is a gaming platform powered by Arduino open hardware, enabling other game developers to build or customise games that incorporate the different sensors into new digital game designs.

HybridPlay is explicitly designed for children’s public playground use; it not only depends on the presence of and interaction with various pieces of popular playground equipment but in attaching them to a digital game experience also clearly reimagines their functions, affordances and meanings (see Figure 6.2). The tagline ‘A new way to play: HybridPlay transforms playgrounds into video games’ is literal: playgrounds are transformed into an element of the digital gaming ecology when the sensor clip is attached to play equipment. And by requiring that children play on physical playground equipment to control actions in a digital game space, the playground becomes a control interface much like a joystick.

The current status of HybridPlay is uncertain. It was launched on a crowdfunding site but did not reach its funding goal, and the campaign is now closed.⁵

Figure 6.1 HybridPlay sensor clip.
Source: HybridPLAY Clara Boj and Diego Diaz 2015

Figure 6.2 HybridPLAY design scenario.
Source: HybridPLAY Clara Boj and Diego Diaz 2015

While the product website is still live, it appears that it never went into production. This may be related to the product promotion and marketing representation of the application, which directly targeted and reshaped the use and meaning of playgrounds. As a kind of gamification, it was informed by an ideology of digital gameplay as radically and positively transformative that could overcome the sedentary effects of digital games by combining their playful attraction with the benefits of physical activity – sometimes referred to as exertion gaming (see Mueller et al., 2011) – while drawing on the benefits of digital games for communication and teamwork by transplanting these dimensions into playground spaces:

HYBRIDPLAY is a new, revolutionary inclusive fitness game device for you and your children to engage in physical activity by playing video games outdoors. Too many phones and tablets. Video games are a fun and enriching tool, but we can go a step further and make games not only mentally, but physically engaging, while bringing kids and adults together outdoors. HYBRIDPLAY combines the best of digital and physical play, enhancing the playground by making it inclusive for all abilities, and bringing back children's excitement for the outdoors. It is the ultimate inclusive fitness game system for kids and adults! Join us for engaging outdoor fitness and play now!⁶

In trying to combine the attractions and benefits of both digital experiences and physical experiences and to address health concerns about digital play by implying that the digital augmentation of public spaces would enhance their attraction to technology-oriented children – essentially suggesting that if you can't get children off the tablet, take the tablet into the playground – HybridPlay implicitly made claims that challenged social norms, values and sensibilities associated with the configuration and understanding of children's play, in particular normative assumptions about what kinds of play activities should be undertaken in places such as playgrounds.

Much like the *Disney Fairies* Trail, there was not a great volume of online public discussion about HybridPlay, but in contrast, the responses available were much more visibly critical. And these public critiques were more clearly aligned with received discourses about both public playgrounds and digital media, with most concerned about the potential of digital play to migrate its negative qualities, such as distraction, sedentary behaviour and antisocial dynamics, into and then corrupt the positive qualities of playgrounds for free and physically active play (despite the claims of the product developers or mechanics of the system contradicting such pronouncements):

This is an absolutely awful ill-conceived application of digital technology. Proponents of the Internet of Things concept have gems like a sensor to tell you when your coffee mug is empty with an app to send a text message. Put the phone down and look in your mug! Same thing here. No Kickstarter needed. Just kick this bad idea to the curb.

For goodness sakes just let children play . . . don't get them addicted to computer games in the playground.

Like the kids are going to do any physical activity, when they have a gaming device in there hands. Here is a idea for you, lock boxes on the playground for phones/games that only open after a hour passes.

(Comments posted to tech blog articles, typos in original)

These affective critiques not only centred on the inherently positive values of physical play and public spaces and the contrasting inherently negative values associated with digital devices and innovation but also encompassed broader notions about the corrosive trajectories of children's play cultures dominated by digital media and risk-aversion regulation:

Maybe we should consider letting kids get hurt now and then to teach them the world is a dangerous place. Let them jump out of swings let them meet random children and play with them. Merry Go Rounds just aren't any fun when you are not going fast enough that you have to hang on.

yo dawg i heard you like to play while you play so we put a tv on all the outside toys so your shut-in kids will want to go the fuck outside once in a while.

(comments posted to tech blog articles)

The sense of incompatibility between public parks and digital play evidenced in these online reactions and comments to HybridPlay is revealing in ways not apparent in the *Disney Fairies* Trail application. Again, however, this is probably not that surprising, given the context and functionality of the application. Rather than a temporary and peripheral exhibition, HybridPlay was imagined and represented as a direct restructuring of and transformation in children's public play spaces – something that aimed to radically reshape the interface and experience of the playground, the kinds of play engaged in within these spaces and consequently how the meanings of such spaces would be understood. Here the how the playground space was adapted with newer Internet of Things sensors, and connectivity profoundly reimagined what a playground could and should be. This reimagining jars with long-standing ideas and deeply held sensibilities about the role of public play and parks – sensibilities shaped by personal and cultural histories of association, memory and experience that are deeply ingrained and largely uninterrogated until they are opened up by seams of the postdigital that rearrange previously distinct technologies and practices of play. In the comments on HybridPlay, it is also clear that playgrounds are for many parents seen as a practical antidote for screen use. Thus, the critiques use the logic of screen time to position playgrounds as a natural break from the continuous interface. Nevertheless, this postdigital intervention into children's public play spaces resonates with the rearrangements that are already well underway – though still unresolved – in domestic spaces. Although the examples discussed are only temporary or incomplete, they render

visible how these spaces are already highly digitally mediated through everyday mobile media infrastructures, devices and practices, and in turn, they register the ongoing potentials for both change and contestation in an era of continuously spreading interfaces.

Conclusion

This chapter has explored how children's contemporary public play spaces, such as playgrounds and parks, are increasingly subjected to forms of integration into digital infrastructures both through the widespread and often-incidental use of personal mobile devices in children's public play and via more-deliberate design interventions that more deliberately seek to embed or augment children's play spaces. The chapter located this shift towards the broader contexts, conceptualisations and contradictions surrounding postdigital play, and the analysis was influenced and illustrated by two recent examples of augmented and interactive play technologies: HybridPlay, a smartphone game technology that wirelessly connects to a sensor-equipped clip to transform playground equipment into gaming interfaces, and *Disney Fairy Trail*, an augmented reality app leveraging Disney's Fairies franchise and designed to produce a 'magical' outdoor fairy hunt in public gardens.

These examples were analysed in terms of their functionality, representation and online reception to explore the often-contradictory sensibilities attached to the reconfiguration and reimagining of children's public play spaces. HybridPlay suggested that the literal application of an 'augmented playground' caused some consternation. *Disney Fairy Trail* was a more temporary project and was aligned with families' patterns of park use to create a child-focused activity during the school holidays in large flora-focused parks, which opened up the larger space of the park to children. Together, these case studies suggest that the postdigital playground is more welcome when it creates novel ways for children to play in spaces that may not typically be considered usual or appropriate for children's play. While this issue did not arise in the data set we gathered, future research clearly needs to explore the implications of these technologies for their capacities to capture personal data and what this datafication of children and play means for the encroachment of commercial activity into public play spaces through digital infrastructures or applications.

This chapter examined how – along a broader trajectory of smart cities and play in urban space, characterised by the blurring of discrete spaces of sociality – the messy arrangements of postdigital playgrounds reveal emerging seams of affective disjuncture and disillusion at the level of social spatial experience. These seams expressed the logic and imperatives of technological innovation and development to spread and try to solve perceived problems while drawing attention to how such postdigital imaginaries, products and practices are received in terms of cultural values and personal sensibilities associated with public spaces, digital technologies and children's play.

Notes

- 1 www.tamperelainen.fi/blogi/420027-pokemon-pelaajat-pois-pikku-kakkosen-puistosta.
- 2 <https://visittampere.fi/en/articles/hottest-pokemon-tips-in-tampere/>.
- 3 www.playablecity.com/cities/bristol/.
- 4 For example, see www.fitness-gaming.com/news/schools/.
- 5 www.indiegogo.com/projects/hybridplay-engaging-fitness-gaming-on-playgrounds#/.
- 6 HybridPlay, www.indiegogo.com/projects/hybridplay-engaging-fitness-gaming-on-playgrounds#/story.

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7 Playful mobility and playable infrastructures in smart cities

Kyle Moore

In July 2016, location-based and augmented reality games entered a new level of public consciousness. The hugely successful Pokémon game franchise released a location-based version in which players were tasked with capturing 150 digital creatures known as Pokémon. The game was a huge success, with an estimated earning power of \$1.6 million per day in the weeks after its initial release (Etherington, 2016). Following this success, we have entered a distinct cultural moment of location-based gaming (Hjorth & Richardson, 2017). Regardless of the game's continued popularity, commercial location-based games like this form part of our everyday understanding and experience of urban environments. With digital technology in urban environments framed as 'smart' (Green, 2019), there is a need to also focus on how proprietary software, as playful as they may be, intersects with these technologies. 'Play' is tied to a discourse of utopianism (Iacovoni, 2007; Nijholt, 2017; Walz, 2010) or subversion (Flanagan, 2007; Stevens, 2007), and the design and implementation of the playable city is an additional form of platform urbanisation (Sadowski, 2020). What does this mean, then, for how we start to think about location-based games, as commercial gaming platforms, entering in city spaces under the discourse of playable cities? This chapter proposes looking at how location-based games offer not only a playable interaction with cities but also facilitate a broader playful form of mobility and movement in and throughout city spaces. This approach suggests play is both an ongoing possibility but also a restrictive force, enabling differential mobilities throughout cities.

As with smart cities, playable city initiatives may be top down – an overlay from external companies adapted to existing practices of mobility and infrastructures. To participate in playable city movements or to play location-based games in cities reflects distinct modes of being in an urban environment. These modes of being come with particular forms of mobility and issues of access – to technology, to open public spaces, to free moments to engage in play – all of which are not equally distributed to those who inhabit the city. This chapter suggests taking another look at the notion of playable cities, to see how the ideas of playful and playable occur through commercial games that intervene in and reframe city spaces. Location-based games may be designed to fit across a plethora of urban settings or designed specifically for a location in particular. Both approaches – either a top-down overlay of playful and playful technology or a bottom-up

design, building unique playful experiences with emerging playable infrastructure – present unique challenges to how we might consider play in cities. By focusing on the playful and the playable as key modes of engaging with the city, this chapter critically engages with notions of openness that are attached to playable cities and location-based gaming.

Location-based games use complex data infrastructures that permeate city spaces. Whether small lesser-known games, or widely discussed games like Niantic Lab's *Pokémon GO*, location-based games make use of maps, digital technologies and city spaces in meaningful yet often-unseen ways. Situating the playful and the playable in contemporary city spaces, this chapter focuses on both the smart city and the playable city as sociocultural and material constructs – as discourses and design practices of how cities do or should operate. Smart and playable cities offer ways to think about how cities are open, accessible and liveable and how digital technologies may create, or restrict, possible movements in city spaces. With this in mind, this chapter examines how commercial gaming platforms fit into these practices and discourses. It investigates how these two dominant ways of viewing technology and cities obscure the underlying power structures present in city spaces. In doing so, the chapter looks at the discourse of smart and playable cities – critically examining how these terms have been used – in particular the notion of playable. A comparison is drawn between these practices and commercial location-based gaming, before discussing the key method of situated play, and primary case studies of Niantic Lab's two location-based gaming series, *Ingress* and *Pokémon GO*.

To study the phenomena of location-based gaming, this chapter uses a situated approach – adopting ethnographic methods to engage with location-based gaming communities in Sydney, Australia. Drawing from the field of digital ethnography (Pink et al., 2016) allows for an understanding of players' engagement with online and in-game communities, with the urban environment and with the mobile device as a material object with its own specificity. Digital ethnography has been adopted to accommodate the ad hoc nature of playing location-based games and urban mobility, combining participant observation and documentation alongside interviews. Such an approach also draws from the concept of situated learning and Lave and Wenger's (1991) notion that active participation in a community results in a deeper learning experience. Combining this with ethnography, play becomes a form of participation – a shared process of producing meaning. The question of how urban mobility might be playful, or how urban infrastructure can be playable, becomes one of how play is situated across a range of material, social and cultural constructions of the urban.

The fieldwork took place in early 2016, before the launch of Niantic Lab's *Pokémon GO*. This included a brief overlap with the closed beta-testing period in Australia before the game's global release. Follow-up interviews were conducted with participants, after the game's launch. The core focus of this fieldwork was on the location-based game *Ingress* – a science fiction location-based game that pits two teams against one another in a battle to claim locations called portals. This fieldwork focuses on Sydney's Resistance community. Rather than focus on both

in-game teams, Resistance and Enlightened, this fieldwork focuses on an in-depth engagement with one side. While interaction with the Enlightened community was frequent, much of playing *Ingress* involves planning and dedicated communication channels, and information is not shared freely between communities. This ethnography used informal interviews and direct observation and participation in communities. As an ethnographer, I was not just observing from a distance but also actively participating in these communities, allowing for a more direct entry into them. In this study, play was used as a key form of engagement – to play together is to build a community and better understand set practices in these spaces.

Situated play

To better understand how play occurs throughout different city spaces, this chapter uses the concept of situated play. Situated play builds on cultural approaches to play, adopting key concepts from the fields of human–computer interaction and a cultural studies approach to games, gaming and game culture. First, situated play deals with the ambiguity of play itself (Sutton-Smith, 2001). The term ‘play’ encompasses a range of activities, practices and meanings. Yet as Sicart (2014) suggests, play is embedded in and integral to our social world. Many scholars have attempted to define ‘play’, and game designer Flanagan (2009, p. 4) categorises these definitions in two camps: those who explore play as voluntary, intrinsic, part of social class, a form of leisure and those who explore play as a ritual and a form of communication and who study play in ‘natural settings’ (Flanagan, 2009, p. 5).

More recently, scholars have begun to discuss play as embedded in our everyday activities – a potentially always-present experience. Mobilising the term ‘ambient play,’ Hjorth and Richardson (2014) explore how play is part of a broader social setting. The concept of ambient play describes the ‘tacit, unofficial and incidental forms of creativity, play and communication’, which are enacted at the site of play (Hjorth & Richardson, 2014, p. 62). With this in mind, play may occur through a number of incidental circumstances; it may not be the underlying goal, but there is the potential for playful activities to occur. More explicitly, the work of Mäyrä (2017) and Stenros et al. (2007) suggests that we contextualise play in a rising ludic shift in society. How, then, might we come to understand specific practices of play? Rather than suggest that play is always occurring, these studies suggest that there is always a potential for play. The challenge, then, is how we start to think about the role of play in playable cities, objects or urban environments. There are two potential ways to frame this: to make existing urban infrastructure more playable or to build a playful and playable urban experience from the ground up.

Situated play is a fluid concept: it allows us to categorise play not as something tied to objects but rather as a complex process of producing and making meaning. Situated play draws from the work of anthropologist of science and technology Suchman (2007, 1987) and her concept of situated actions: specifically, no engagement with technology can be understood without examining the context.

Yates and Littleton (1999) categorise gaming as a situated action. For the authors, gaming exists in the cultural niche at the intersection of games, gamers and gaming culture. Apperley (2010) expands on these ideas to also include the embodied and the local, paying specific attention to bodies and rhythms. While authors such as Grüter and Oks (2007) have used this term to discuss play as a form of enacted game mechanics, this chapter takes the term ‘situated play’ to mean that play operates as a distinct cultural practice; not as something tied to game objects but instead as a fluid practice that permeates multiple sociocultural and material conditions.

In short, situated play acknowledges the social, cultural and material conditions that shape play while noting that play may reform and reshape these conditions. Situated play allows us to start to consider how play intersects with sociocultural framings around cities and accessibility. Indeed, as we consider the discourse of smart and playable cities, it is important to think more critically about what play is in these situations exactly. Moreover, situated play allows us to better understand the material conditions that frame play. Although many of these have been designed for smart or playable purposes, it is important to acknowledge the transformative abilities of play to start to reshape sociocultural boundaries around these – often-invisible or often-hidden – material conditions.

Playing location-based games

The sun was still out when I arrived in Sydney’s northern suburb of Chatswood. Arriving by rail, I left the train station and headed towards the nearby shopping district and towards the restaurant where I and other *Ingress* players had agreed to meet. This would be one of many interactions with the Northern Sydney Resistance group. Our goal was to meet up, be social and gather resources through farming but also to enjoy the annual public light festival that was taking place in the public square. Farming is a regular occurrence: in this game, it involves a group of players meeting at the desired location to extract resources from portals or digital representations of physical landmarks in the game. With this group, we had met many times and were familiar with one another. We had visited the shopping district with its large public concourse – surrounded by the suburb’s library and a range of restaurants – several times before. The key difference here is that Sydney’s annual light festival, Vivid, was taking place. Usually confined to Sydney’s cultural precinct (NSW Planning and Environment, 2014) and key iconic landmarks of the Opera House and Harbour Bridge, Vivid had started to venture into different suburbs and spread a playful ethos throughout Sydney. Arriving early, I sat and waited and attempted to make communication through Google’s chat service (the primary means of communication in this group) and judge the estimated arrival time of other team members.

While this brief vignette is just one instance of organising and meeting up to farm resources, such occurrences were common throughout my fieldwork. It highlights that public space may be both playable and playful – consisting of playable objects while retaining a noninstrumental playfulness. Public space, such

as the concourse in Sydney's north, provides an open space for various modes of engagement. This might be commercial (restaurants and cafés) or for social good (public library); or, as Stevens (2007) suggests, public space may be noninstrumental and can be the setting for informal interactions and play. This location was a regular meeting point of the light festival. The large public space, multiple landmarks, access to shelter and free public Wi-Fi all made for ideal spots for farming – which involves sitting for roughly 30 minutes as a group of people, all tapping away at their phones. So frequent were the visits that a security guard inquired 'are you playing that alien game?' – one participant noting, after the guard had left, that 'we try to get him to play but haven't had any luck'. Such interactions highlight the tensions between play in public and perceptions around the appropriate use of public space.

While the underlying infrastructure of the game may be invisible to those who don't play *Ingress*, there are some gestures that signal play to those who are familiar with the game – a large group of people, sitting for over 30 minutes looking at their phones becomes a sign of play. Such public gatherings are not unique to *Ingress*. For instance, *Pokémon GO* raid battles often require multiple users to meet and collaborate to overcome more difficult in-game challenges. The collective of people, all with phones in hand, some wandering in circles trying to overcome GPS drift, can often draw the attention of the general public. Outwardly, these meetups may more closely resemble wandering adults in public spaces and parks and may be met with a negative response. This is because there are often no visible gestural makers to suggest 'this is play'. From the outside, to play *Ingress* or *Pokémon GO* socially is to stand as a group of people all tapping on their respective phones. On this topic, some participants note their frequenting of locations and altercations that were had in public as their wandering with phone in hand was coded as deviant from passive onlookers, some of whom were concerned about public safety. This raises issues for play in public space as 'private' through hidden infrastructures such as location-based games vs play as a public spectacle. The invitation to play large-scale games and playable infrastructure means there are clear markers that 'this is play'.

Rather than always meeting to sit in one location, playing *Ingress* can be highly mobile. Our everyday mobility intersects with urban infrastructures that enable or hinder movement. Such instances can be moments of meaningful play: moving from bus to light rail (tram) to train – walking between these modes of transport as a group and tapping our phones and engaging in little conversation. The event was unusual and born out of unusual circumstances. Normally for *Ingress*, we would meet at the desired location, farm and gather resources while socialising over food and drinks. Our movement this time was retaliation against enemy players who had rented a van and driven around Sydney's Inner Western suburbs, just west of the central business district, claiming the territory for their team. We opted to use public transport – taking direct lines down busy industry roads, hopping between main stations and wandering down back lanes riddled with murals and graffiti. Throughout the suburbs, street art began to reflect more broadly the tensions between the working-class history and the increasing gentrification of these

suburbs (Moore, 2015). These places reflect ongoing contention over the ownership and use of land in Australia – with street art reflecting the rich Indigenous history and ongoing struggles of the country’s Indigenous people. As we tried to reclaim our in-game territory through play, parallels emerged over the regulation, use, function and histories of public space. This reveals conflicting cultural practices around play and being in public spaces. What is a contested history over ownership and belonging to geographic locations for some becomes a digitally encoded playground for others.

This level of differential mobility occurs on two levels. The first occurs at the level of infrastructure and technological access: who has the capacity to map these spaces? The second is tied to an issue of mobility: who has the time/space to move around and perform this labour? There is an intersection of infrastructure and mobility exemplified through the freedom to move and access to mapping technologies. This is less articulated in the gameplay of *Pokémon Go* and more evident with the maps and the playable infrastructure of PokéStops that depends on this embedded process of cartography. Because the game draws from the map data of *Ingress*, which were produced by players and early adopters (and eventually allowing high-level players to edit), the power dynamics of *Ingress* become encoded in future games. City spaces, especially those frequented by those with flexible work schedules, became the preferred location for play. This is the result of *Ingress* criteria based on cultural landmarks and players of educational or civic value (Ingress Help Center, 2017). This is the concern of ‘platforming’ location-based games. Indeed, these levels of cartographic inequality are present in all maps. Taken with this are the forms of discourse attached to play and playing in public – for instance, what bodies can visibly stand in locations, roam around and from an outsider’s perspective ‘loiter’. Flanagan (2007) explores this in her notes on ‘the drift’ – what about those who are mobile not out of choice? How are these bodies rendered visible/invisible in these playable systems? These all form part of a differential urban mobility – one that becomes increasingly embedded in location-based games.

Smart and playable cities

There is a long history that links play and cities, including in-game representations of fictional and real cities, playful art installations, performances and design practices in cities across the world. The act of moving through and inhabiting a city can be deeply playful. Yet cities can include digital technologies in a way that is deeply unplayful. New media theorist Manovich (2006) discusses the layering of digital technologies as an augmentation of space. There is an emphasis in Manovich’s work on these technologies as distinctly surveillant – of digital infrastructures that reinforce panoptic mechanisms in ‘open’ and public space. While smart cities can be open and civic (Townsend, 2014), there is still an underlying focus on data infrastructures. If the playable city emerges as a form of playful subversion or even a possibility of play in these infrastructures, a critical understanding of these forms of data is needed. Kitchin and Dodge (2011) call such practices

a hybrid code/space. The authors suggest that software is embedded in everyday life across four levels: coded objects, infrastructures, processes and assemblages (2011, p. 5). Whether smart or playable, the focus is often on the uses of data and technologies rather than on the underlying infrastructures.

The playable city may include in-game cities, either real or fictional, that players can navigate and play with and in (Nijholt, 2017). They may also be material spaces, building a playful opposition to the often-cold, data-driven city. Sicart (2016) even goes as far to suggest that cities are not becoming smart. He notes that ‘the data produced and used in smart cities should not necessarily be presented as a utility for citizens. It should be presented as a prop for play, as games but also as the source for toys and playgrounds’ (Sicart, 2016, p. 27). The idea of play as a prop introduces a unique way of starting to understand the relationship between the data-dense and codified spaces present in the work of Manovich (2006) and Kitchin and Dodge (2011). There is a shift here towards considering the role of data-as-object, an underlying infrastructure, as an object for play. The matter of playability becomes linked here to data produced by, and for, those who inhabit urban environments.

While the discourse around play shifts and moves with technology, there is always an element of play as potentially utopian (Iacovoni, 2007; Nijholt, 2017; Walz, 2010). To state that data and infrastructure may be playable does not mean that all city spaces are potentially playful or playable. There is a potential here to think about the design and structure of space and infrastructure as having playful elements. Nijholt (2017, p. 19) argues that there should be an emphasis not on isolated playful events but rather on introducing this potential for play. He further notes that

any smart technology can allow playful use, but of course, smart technology can also be developed with the aim of increasing a city’s playfulness. Whether a smart city is playful depends very much on how residents experience the city and how the city stimulates ‘playful play’.

Such claims are echoed by Alfrink’s concept of the gameful city, which emphasises ‘the creative potential of play’ (Alfrink, 2015, p. 503). Through a more ‘gameful’ or game-like design process, cities can have the potential for play. Similarly, Walz (2010) discusses the potential for architecture to be playful in and of itself through his key concept of ludic architecture. Importantly, then, it is about the design of not just smart technology but our everyday urban conditions; how we move and occupy space in playful or resistant ways is of equal importance.

The smart or software-driven city, while potentially ‘opening’ the city up by inviting active participation or increased technological access, also highlights levels of inequality present within urban environments and location-based gaming events, cultures and communities. The playable city aims to subvert the increasingly prevalent smart city discourse of openness, civic responsibility and accessibility via the process of playful art installations (Nijholt, 2017; Sicart, 2016, 2015). Playable cities seek to subvert or hijack particular forms of infrastructure

(Nijholt, 2017, p. 10) – akin to historically situated artistic and avant-garde practices such as the Situationist International *dérivé* (Alfrink, 2015; Coulton et al., 2017; Rauscher, 2016). Whereas these practices deal with the immediate architectural materialities of city spaces, playable cities take a similar view of the underlying software infrastructures. For Sicart (2016, p. 27), these underlying layers of data within urban environments can become props for play, even going so far as to suggest that cities are machines for play (Sicart, 2015). As playable city designer Innocent (2017a, 2017b) suggests, play has had a more prominent role in everyday urban life. While commercial location-based games occupy unique niches of everyday life for their players, it is important to understand how these mobile-mediated experiences may afford new forms of playful engagement with city spaces and render material elements of city spaces playable.

The design, development and implementation of playful and playable interventions in everyday public and urban spaces has a history in subverting or challenging discourse of everyday city spaces and their uses. Technological interventions in public space took place alongside artistic interventions. Leorke (2014) suggests that this coincides with anxieties about the decline of public life (Auge, 1995) and the inclusion of GPS into new media art practices (de Souza e Silva & Frith, 2012; Farman, 2012; Flanagan, 2009). This signals a shift to start to think about playfulness and playability in cities as less intrinsically tied to the design and structure of city spaces and more tied to personal media devices and practices' being layered over city spaces. Of course, GPS is accessible through mobile devices, but it is also a pervasive technology. Mapped spaces and street views exist regardless of users' access to their devices. Some of these are technologically mediated, others less so. All of these practices produce new forms of mobility.

Playful mobility and playable infrastructure

Alongside thinking about the city as playable, we should also consider the playful. Playfulness in the city manifests through ludic mobility – a playful movement through urban spaces. Mobility has become a way to understand contemporary urban and social life as grounded in the movement of people. Sheller and Urry (2006) use the term 'mobility paradigm' as a way of understanding the contemporary social world as governed and influenced by the movement of people. Whether this is through migration, transport, communication or social class, the ability, or indeed inability, to move is a key factor in contemporary urban life. While movement may in and of itself not be playful, there is a history of moving through urban environments with a lusory attitude (Suits, 2005). That is, with a playful attitude with the intention of subversion or creative expression, these forms of movement become a comparison point for more-contemporary locative media practices. Importantly, urban environments, and indeed locative gaming, are not inherently playful or transformative. Rather, there is a potential for play and transformative practices – a chance to produce new forms of meaning in our everyday mobility. It is doubly important to be critical of this discourse and to note that if playful forms of mobility exist, we must consider who might be excluded. Frith

(2012) asserts that digital technology may work to further divide what he terms 'differential mobility': the uneven distributions of mobility in society. It is critical, then, that we do not consider play as purely transformative or subversive or always as a form of 'opening up' a city space. Of course, play is fun, but for those who move through the city, play may not always be free movement. In drawing comparisons between commercial location-based gaming and forms of urban mobility, these levels of uneven mobility must be considered.

Often playful locative media practices are discussed in relation to their remediation of turn-of-the-century urban mobility. For de Souza e Silva and Hjorth (2009) location-based games fit into a broader spectrum of urban mobile and hybrid gaming and reveal the inherent playfulness of urban environments. Through a comparison of the *flâneur*, the Situationist International avant-garde practice of the *dérivé* and more contemporary practices of parkour, the authors compare contemporary mobile-mediated play to forms of critical urban mobility. Both practices contain several specificities and relationships with functional and often-capitalist notions of the urban environment, yet each reflects a type of ludic engagement with that environment. Stevens (2007) discusses how these forms of movement act as a way to break down distinctions between public and private, work and leisure, to make the distinctions whereby playful movement through cities are part of a larger social practice of being in and inhabiting city spaces. He reflects on the city, noting that it 'creates conditions for play because, like play activity itself, it situates objects in new, unconventional relationships, it enhances the recognition of connections which are not about instrumentality or power' (Stevens, 2007, p. 16). While location-based gaming adds new playable objects and forms of playful mobility, it does so by drawing directly from these social conditions that make urban play possible.

Locative art plays an important role in framing playful interactions with place – an emplaced practice and means of reframing public spaces through alternate readings – linking to the aforementioned ludic mobilities of the Situationist International and also to the practices of the New Games movement. There is an emphasis here, through art, through critical engagement and through play, on discursive constructions around urban play as subversive or civic – as countering a functionality of urban environments. As McGarrigle (2010, p. 60) notes, 'it is important, however, for a new artform to recognise its influences, to pay its dues where necessary, and when techniques and approaches are borrowed or re-invented to fully recognise their origins, purposes, and application'. Such discourse influenced early location-based games such as *Mogi* (Joffe, 2007; Licoppe & Inada, 2008, 2010), *Boffighters* (Struppek & Willis, 2007) and *Big Urban Game* (Lantz, 2007). Practices of wayfinding and locating interactive objects expanded into practices of geocaching (Peters, 2007). These games set up particular frameworks for how we understand play. Not only this, but they start to shift how we might understand mobility not just as a form of movement but also as a form of placemaking. Hjorth and Richardson (2017) categorise these forms of digital wayfinding as part of a larger 'playful turn': an increase in playful and playable media practices that coincides with the rise in locative and ubiquitous technology. Through these

designs and the pervasiveness of these technologies, we see navigational practices becoming infused with a sense of playfulness – a playful mobility to navigate and interact with everyday urban life.

These practices are comparable in that they all represent particular forms of corporeal mobility (Sheller & Urry, 2006): physical movement within urban environments. This manifests as particular modes of exploration and wayfinding – the result of which is often an individualised rereading of city spaces. In *Ingress* and *Pokémon GO*, these individual modes of reading – whether through daily transport or the desire to explore the urban or indeed even through distant locations beyond the city – become incorporated into a commercial and crowd-sourced map. The labour of this cartography reveals systems of inequality in early data-dense physical spaces (Graham, 2005; Kitchin & Dodge, 2011; Manovich, 2006). Consequently, the re-mediation of urban mobility needs to be considered in relation to the commercial and technological boundaries in which these movements are performed, tracked and archived. Even the taken-for-granted level of mobility performed through play requires further critical reading. As Flanagan (2007) notes, when we begin to understand movement through urban environments as a *dérivé* or drift, what becomes of those for whom the drift is not voluntary or experimental? There are underlying elements of everyday urban mobility that may allow for play – whether experimental or formalised through gaming systems such as *Ingress* and *Pokémon GO*. Such practices, however, are not universal and often only act to further highlight systems of inequality within urban environments.

The intersection of mobile devices and public infrastructure creates a chance to move playfully in public space. These infrastructures, while playable, are grounded in a history of satellite navigation and GPS. The emphasis in *Ingress* and *Pokémon GO* is not just on wayfinding but also on finding and producing particular systems of value of ideal patterns of navigation towards objects of interest. Extending from mobility, which may be approached with a lusive or playful attitude, location-based games generate playable infrastructures that exist alongside urban infrastructures. We should pay attention not only to the infrastructure that makes locative mobile media possible but also to the complex map-making process across Niantic's location-based games. Furthermore, we should consider the underlying economic infrastructure of these games (Iveson, 2016). *Pokémon GO* affords particular modes of mobility: moving through space to capture creatures and to hatch eggs through a built-in digital pedometer. This ties to Niantic's microtransaction revenue model (Tassi, 2019) where additional egg incubators can be purchased to aid the process. Given the limited number of Pokémon a player can hold, there is a further need to purchase increased storage (Thier, 2019). This encourages particular modes of playing towards an increased reliance on microtransactions. Movement is also tracked, reportedly up to 13 times per minute (D'Anastasio & Mehrotra, 2019), raising concerns over just what this data is for and what is being produced. Therefore, it is not just the game or mobile device that we need to consider but also the underlying economic infrastructure that supports these technologies.

As Frith and Özkul (2019) suggest, the study of mobile media has increasingly become smartphone studies, and we need to look beyond mobile media directly. These ideas are furthered by Horst, who suggests an emphasis on future mobile media studies, focusing on underlying infrastructures. She suggests we pay attention 'to the dynamics of power as they emerge through the technical, social, political, and regulatory infrastructures hidden behind the past decades' primary focus on users, consumption and meaning' (Horst, 2013, p. 148). In location-based gaming, this means focusing on elements of design and on how these may intersect with existing infrastructures of not just mobile media but also cities themselves.

Drawing from the work of Parks (2012, p. 69), mobile devices – location-based games specifically – act as a portal technology that enable and structure users' infrastructural connections. She notes that while infrastructures are often invisible, they can be made visible through design and planning, construction zones, sites of infrastructure, system failures and portals such as mobile devices. Farman (2015) expands on this point, suggesting there is a politics to these layers of visibility. For Farman, the lack of visibility reveals the politics of infrastructure: 'These invisible infrastructures of mobile social media are the pivot point for politics of use' (2015, p. 3). This exemplifies his key argument on how we negotiate and make sense of infrastructures as known or unknown. To have infrastructures buried as unknown is to also hide their politics of use.

This chapter views location-based gaming as a form of portal technology: a making visible of invisible infrastructure. Not only are they made visible, but I suggest here that they are made 'playable' as well. As Goggin (2012) suggests, locative media deals explicitly with place but has also undergone a 'locational turn' whereby the digital geo-coordinates of place become increasingly important. With location-based gaming, there is a clear emphasis on location as the primary infrastructure. In *Ingress* and *Pokémon GO*, the visibility of infrastructure manifests through map-based interfaces that show key points of interest. Yet this emphasis on location renders the labour of how these maps were produced as invisible. On playfully producing maps, Lammes (2015, p. 204) notes that this practice depends largely on the mapping of landmarks by others. She also notes the ludification of this practice through digital technologies – the possibility of the map's functioning as a playground through informal social play (Lammes, 2015, p. 200). In focusing on the game, we lose sight of the underlying labour infrastructure. As noted earlier, when *Pokémon GO* was released, it directly ported maps of key playable locations submitted by players of Niantic's previous game, *Ingress*. As these data infrastructures were ported, the traces of these players/cartographers were removed – leaving only photographs and their descriptions of the key location or landmark. As Niantic continues to use these maps of landmarks for its latest game, *Harry Potter: Wizards Unite*, the labour of early adopters in the *Ingress* community is increasingly obscured.

Similar issues arise in discussions of locative media, perhaps most notably with the commercial platform Foursquare, which represents a popularisation of locative media (Barreneche & Wilken, 2015) whereby the process of gamification allows users to generate, play with and broadcast their location-sensitive information

(Kennedy & Wilken, 2016). Through this gamification-like practice, it attaches a sense of playability to these locations. Yet tensions again emerge here around who owns and controls this information (Humphreys & Wilken, 2015). While the underlying infrastructure of locative media is always proprietary software, the labour of generating this infrastructure gives players, in particular those of *Ingress*, a sense of ownership over these locations. *Ingress*, as a platform, reveals tensions in who owns and controls the information of geo-coordinates and locations, both in terms of public landmarks and commercial venues. Such tensions emerge around the process of producing locations and the incorporation of a place in a manageable and commercial data set of interactive locations.

Importantly, more than mere social surveillance occurs in locative media. As noted by Hulsey and Reeves (2014), commercial surveillance comes from Niantic, which archives all digital traces made through the course of play. The extensive crowdsourced map of *Ingress* is built on the labour and practices of a community – an explicit case of communities of play and their leisure practices, their social spaces and their free time and routines all being incorporated into an extensive and playable map. Under the notion of productive play, or of accumulating gaming capital, the map expands beyond everyday routines and rhythms and begins to include remote portals, unusual points of interest and a dense urban infrastructure. It is playable for *Ingress* players, but it becomes the intellectual property of Niantic. While the infrastructure may be playable, there is an increasing disconnect from the practice of how this infrastructure was made.

Conclusion

The playable city discourse is present in location-based gaming practices. The two practices inform each other. Situated play as a concept means that forms of play impact each other – they are not mutually exclusive but instead form a rich network of meanings that inform broader discourses around play in public. Each of these practices has a potential to mobilise play to open spaces, to subvert them, to build communities and to increase value both in and out of games. These are common discourses in location-based gaming to focus on their transformative potential. While this may occur for individuals playing, it is equally important to consider how the playful attitude relates to playable infrastructures. While these infrastructures may not have been built for play – such as public Wi-Fi or even mobile phone cameras – they may become incorporated into acts of play. This is a core facet of playable cities: the smart city may not be built for play, but that play is still possible. Play can open up spaces in cities, but we need to be critical of where these spaces are located and the sociocultural conditions that allow play to operate as ‘open’ in them. In opening up these spaces for play, both designers and players need to consider the underlying mobilities present in urban infrastructure. These differential mobilities inform play, and it should not be understood purely as a free and unifying process. Rather, it is embedded in existing inequalities in the city and currently remains open mostly for those who have privileged mobility in these particular spaces.

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8 In praise of stupid

Games, play and ideology in the smart city

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Introduction

Sidewalk Labs, a company aiming to use technology to improve urban life and owned by Google's parent, Alphabet, released to great fanfare its 1,524-page plan to transform Toronto and its waterfront into the foremost smart city on the planet. The Master Innovation and Development Plan – officially known as *Toronto Tomorrow: A New Approach for Inclusive Growth* – was published in June 2019 and has since been made accessible in the form of dozens of individual chapters, documents and appendices. The plan's topics include descriptions of its participatory development process wherein more than 1,500 Torontonians were consulted, broad sketches of innovations in urban mobility, housing and community building, and highly technical documents detailing a new thermal energy grid and efficient timber skyscraper construction (Sidewalk Toronto, 2019). Globally renowned design practice Snohetta has been enlisted to propel the project's vision forward, and a third-party analysis by urbanMetrics determined that the plan will create '44,000 jobs (27,000 more than would be created in a business-as-usual baseline scenario), generate \$4.3 billion in annual tax revenues (\$2.8 billion more than the baseline), and add \$14.2 billion annually in Canadian gross domestic product (\$9 billion more than the baseline)' (Sidewalk Labs, 2019).¹

Sidewalk Labs is run by former New York City Deputy Mayor Dan Doctoroff, a politician and businessperson known for helping transform New York City by using forward-looking practices in urban planning, economic development and transportation. Under then-mayor Michael Bloomberg, Doctoroff's team presided over massive urban changes, including the High Line development that reimagined an abandoned railroad spur into a 1.45-mile-long linear park and numerous technological advances designed to make the city more environmentally sustainable. In his new role at Sidewalk Labs, Doctoroff has championed the visionary plan for Toronto, saying that it could 'create the neighbourhood of the future in the right kind of way, with people at its centre, and with cutting edge-technology and forward-thinking urban design' (Sidewalk Labs, 2019). Doctoroff and his team ultimately aim to accomplish three main goals: 'shorten commute times for hard-working households, make housing more affordable, and create a new standard for a healthier planet' (Sidewalk Labs, 2019).

Smart cities, like the one imagined in the *Toronto Tomorrow* plan, are a product of the latest in urban innovation and theory, infusing city infrastructure with new technologies in order to create places to live, work and play that are more efficient, liveable, safe and productive. Such humane goals seem to us unassailable. After all, what could possibly be wrong with revising the concept of the city to place ‘people at its centre’ (Sidewalk Labs, 2019, para. 2)? The catch, of course, is to be found in Doctoroff’s minatory phrase about creating this new people-centred space in ‘the right kind of way,’ a locution not lost on the many people now voicing complaints and organising protests against the plan. Putting people at the centre of technologised urban renewal, it turns out, is not always what people want or in their best interest.

When the *modus operandi* of smart cities is efficiency and when this objective becomes a hegemonic design principle, the dystopian end result conjures in the imagination an alternative: the ‘stupid’ city. What, exactly, are the assumed ideologies behind ‘smartness’? Where is the boundary at which intelligence becomes sinister? The concept of the smart city presupposes that cities not only can be improved but should be, progressing geometrically from stupid to smart. This assumption generally discounts the fact that the benefits from such progress most often accrue to those who hold financial or political (and, by extension, informational and communicative) power in the neoliberal city (Wyly et al., 2018; Grossi & Pianezzi, 2017; Gibbs et al., 2013; Castells, 2009). From predictive policing to dockless mobility systems, the utopian potential of the smart city and its technologies is attenuated by a reliance on ostensible neutrality: algorithms crunching data sets, racist and biased though both might be (Noble, 2018; Sanders & Sheptycki, 2017).

Games are often envisioned similarly. There is an implicit (at times bordering on overt) instrumentalisation at work among scholars and practitioners who insist on games’ utility, including the assertion that games are simply stress relievers and pronouncements about their capacity to improve spatial awareness and awaken genetic survival codes (e.g. Ash, 2009; Finnegan, 2014). Good games are smart and smart games are good, such discourses presume, because they teach and delight, captivate and release. And this instruction, delectation, fascination and acquittal can be appropriated for all manner of applications, including military recruitment (e.g. *America’s Army*, 2002), workforce training (e.g. OSHA’s *Hazard Identification Training Tool*, 2014), and electioneering (e.g. *The Howard Dean for Iowa Game*, 2003). But to instrumentalise games – something that other chapters in this book argue predates the concept of the smart city by decades (if not centuries) and that we argue predates it by millennia (e.g. chess as military strategy game) – is to also efface their ludic quality, at least in part. Johan Huizinga, for example, connected the decline of play with the development of modernity, right as the notion of serious games was formalised in the postwar period (1949). Is a ‘smart’ game really much of a game at all if its principle goal is not felicity but rather training behaviour and agency for purposes entirely outside of the game itself?

This chapter explores the interlocking and underlying logics of the smart city and the smart game, logics that converge particularly in gamified smart city technologies. We consider this pairing in particular because so much of the discourse surrounding smart cities is built on promises of pleasure and fun. Global consulting firm McKinsey, for instance, proposes that smart cities be governed by networks of public-facing applications that are ‘compelling and even fun to use’ (McKinsey, 2018, p. 101) and recommends that the adoption of smart city technologies will occur more rapidly if they are designed to provide an ‘intuitive, enjoyable user experience’ (p. 92). The same report refers to governments, utilities, real estate developers and private-sector firms as players; discusses the urban space before redevelopment as a playing field; and calls the processes by which municipal authorities and entrepreneurs become partnered plays. Similarly, the city of Boston’s internal guide to urban change is officially called the ‘Boston Smart City Playbook,’ and Bernard Cathelat’s UNESCO-funded book *Smart Cities: Shaping the Society of 2030* praises the city of Oslo for its development of a *Pokémon Go*-inspired game called *Traffic Agent*, which ‘encourages *high school and primary school students* to become special agents and report problems and discrepancies seen on their way to school’ (p. 213, emphasis in original). From inception to implementation, the smart city is game-like. What is being hidden behind the metaphor of the smart city’s ludic intelligence and preferred practice?

We argue that this hidden meaning is made plain through the ideologies that undergird the smart city and the smart game. The smart city, for its part, is based on a neoliberal ideology: to borrow from Brenner and Theodore (two among numerous scholars who highlight the transformation since the late 1970s of global socio-cultural, political and economic regimes), ‘the belief that open, competitive, and unregulated markets, liberated from all forms of state interference, represent the optimal mechanism for economic development’ (2002, p. 2). The smart game is based largely on a synonymous ideology: the computational promise in smart games based on surveillance and subsequent adaptation to a player’s decisions that operates on the belief that the ‘hidden hand’ of the game guarantees the best gameplay. These ideologies converge in the notion that the smartest city might not require any kind of human governance at all and that the smartest game is a tool towards this end. Indeed, as we will discuss, the spectre of ‘participation’, so often used as a means of evacuating democratic engagement in service of this neoliberal ideology (Lee et al., 2015), is precisely what surfaces at the confluence of smart cities and smart games.

In considering the interlocking and underlying logics of the smart city and smart game, we make a counterargument for a stupider game and stupider city, not for the purpose of being glib but to help explore efficiency, economic growth and depoliticisation as goals in a ‘smart’ world. Essentially, in this chapter, we praise the stupid, the ways of being and playing in urban space that lack intentional, instrumental value for capital accumulation and instead waste time, energy and labour to produce little more than human joy and pleasure amid the neoliberal city. In reorienting urban and game discourses away from the ‘smart’, we argue for an alternative set of humanistic values to govern spaces of collective life.

The smart city

Smart city discourse emerged during the 1990s and 2000s as cities began to integrate their development and branding strategies with emerging information and communication technologies. While only written at the end of 2008, Robert Hollands's 'Will the Real Smart City Please Stand Up?' is one of the most frequently cited articles to grapple with this urban development trend and its diverse, sometimes-conflicting range of definitions:

while the adjective smart clearly implies some kind of positive urban-based technological innovation and change via ICTs [Information and Communications Technologies], analogous to the wired (Dutton, 1987), 'digital' (Ishido, 2002), telecommunications (Graham & Marvin, 1996), informational (Castells, 1996) or intelligent city (Komninos, 2002), it has also been utilised in relation to 'egovernance' (Eurocities, 2007; Van der Meer & Van Winden, 2003), communities and social learning (Coe et al., 2000), and in addressing issues of urban growth and social and environmental sustainability (Smart Growth Network, 2007; Polese & Stren, 2000; Satterthwaite, 1999). Further terminological confusion arises around the link between IT, knowledge, and the culturally creative industries (arts, media, culture), in discussions about the knowledge economy (Carrillo, 2006; Wolfe & Holbrook, 2002), and debates about creative cities (see Eger, 2003; Florida, 2002; Hall, 2000; Landry, 2000) (p. 304)

One key consideration that Hollands (2008) highlights is that smart city discourse originated with libertarian, corporate and entrepreneurial-minded ideologies in tandem with creative city visions espoused by figures such as Richard Florida. Smart cities, he writes, have 'a strong pro-business/entrepreneurial state ethos [and] a related concern is with particular high-tech and creative industries such as digital media, the arts and the cultural industries more generally' (Hollands, 2008, p. 309). Analyses after Hollands have either critiqued or been sublimated into this ideological origin point. Alan Wiig (2016), for example, has noted the 'empty rhetoric' of smart cities, focusing on the role that IBM played in both popularising the term and actually trademarking the term 'smarter cities' (which leads us to wonder who holds the rights to the 'smartest city'). Similarly, Söderström et al. (2014) focused their critique on IBM's smarter cities initiatives and explicitly describe the entire smart city enterprise as little more than 'corporate storytelling'. Kitchin (2014) explains that smart cities have an

underlying neoliberal ethos that prioritises market-led and technological solutions to city governance and development, and it is perhaps no surprise that some of the strongest advocates for smart city development are big businesses (e.g., IBM, CISCO, Microsoft, Intel, Siemens, Oracle, SAP) that, on the one hand, are pushing for the adoption of their new technologies and services by cities and states and, on the other, are seeking deregulation, privatisation and more open economies that enable more efficient capital accumulation.

(p. 2)

Despite its origin in corporate America, the concept of the smart city has been particularly popular in Europe, especially, as Vanolo (2014) argues, ‘after the expression “smart city” became part of the complex mechanisms of EU research funding’ (p. 888). Angelidou (2014) offers a typical and relatively refined analysis of European smart city thinking when she proposes ‘four strategic choices’ in implementing smart city policies: ‘national versus local strategies, strategies for new versus existing cities, hard versus soft infrastructure-oriented strategies, and sector-based versus geographically based strategies’ (p. S3). Such analyses, while undoubtedly engaged in examinations of how best to design, build and renew urban spaces, remain beholden to the starting assumption that – despite a long history of critique most recently in the neoliberal framework of corporate America – intelligence, technology and progress are all unproblematically good aims. Indeed, in one magisterial look at ‘actually existing smart cities’, Shelton et al. (2015) note that many European efforts rely not only on US corporate technologies and services but on US philanthropy through the likes of Bloomberg Philanthropies and its relationship to former New York City mayor Michael Bloomberg, his financialisation technology company Bloomberg LP and his post-mayorship organisation Bloomberg Associates, which provides consulting services to cities and even to Sidewalk Labs, which is run by Bloomberg’s close associate Dan Doctoroff. Webs of influence like these are so common and far reaching – yet so inconsistently discussed – that recounting them in public seems more like participating in conspiracy culture than participating in civic engagement. Bloomberg-funded projects in Barcelona (a city-specific networking app called Vincles), Kirklees (a person-to-person goods-sharing website called Comoodle), Athens (an online community problem-solving website called synAthena), Warsaw (a smartphone training programme for the visually impaired called Virtual Warsaw) and Stockholm (a crowdsourced carbon sequestration initiative called the Biochar Project) are but a handful of examples.

We, of course, find ourselves facing down this singular force (i.e. Bloomberg) for driving the smart city revolution again in *Toronto Tomorrow*. The beneficence of the project’s creators is more easily problematised when placed against a critical intellectual lineage at the nexus of unchecked philanthropic power and for-profit corporate enterprise, all in the name of efficiency. Kitchin’s analysis of smart cities as acting in the interests of ‘more efficient capital accumulation’ (2014, p. 2) alters how we interpret *Toronto Tomorrow*’s promise to ‘add \$14.2 billion annually in Canadian gross domestic product’ (Sidewalk Labs, 2019). With intelligence like this, who needs the state?

The smart game

‘Smart’ or ‘intelligent’ game systems betray an archness similar to that of the smart city. Meant to evoke the creative and responsive decision-making promised by artificial intelligence (largely code for ‘highly surveilled and somewhat adaptive’ systems), smart games use a variety of technologies to monitor player behaviours and alter (i.e. control) the ludic experience. As in smart city discourse, the purported end of such control is generally framed as the enhancement of enjoyment

and vitality. In other words, computation signifies and stands in for intelligence – or, more accurately, a particular kind of intelligence – as opposed to simply functioning as a means for acquiring and practising creativity and adaptability.

A 2019 US Patent by Michael Martin Maharbiz and Steve Jaqua, for instance, proposes to end the tedium of board games such as *Monopoly* and *Sorry*, which the patent application states are plagued by ‘extensive record keeping and scoring due to a lack of computer awareness of game pieces’. The solution that Maharbiz and Jaqua describe involves designing games for an ‘intelligent game system’ that includes ‘digital light processors (DLP® Texas Instruments), LCD projectors, and flat panel displays, coupled with [technologies that] simplify and facilitate the logistic portion of game play’. As the patent holders note,

An intelligent game system comprises one or more sensors, a controller, and a projector, the sensors each having an identifier. The sensors obtain object information from intelligent game piece objects and transfer the object information to a controller where it is associated with a sensor identifier and the sensor identifier is associated with a corresponding portion of an image. The controller interacts with the intelligent game piece objects, for managing game play, and for preparing and transferring a changing image to a projector.

Thus, by continuously monitoring every piece, an intelligent game system can ensure the achievement of the management objectives that the designers programmed into the system. Such an aware and adaptive system dynamically changes the player’s experience, by making the game itself easier or harder, faster or slower, more edifying or opaque and thus presumably more enjoyable and vivifying.

Interest in this kind of human-designed, machine-coordinated vision of player experience, learning and behaviour via computationally intelligent and adaptive systems is hardly new, however. Rolf F. Nohr’s compendious *Unternehmensplan-spiele 1955–1975: Die Herstellung unternehmerischer Rationalität im Spiel* [*Business Simulation Games 1955–1975: The Invention of Game-Based Entrepreneurial Rationality*] (2019) extensively catalogues the earliest efforts to build ‘smart’ games – developed and deployed in the military–industrial complex – that functioned as corporate training tools and, at a broader level, as intellectual, cultural and ideological steering mechanisms. These efforts were extended into popular culture in the 1970s by toy and game manufacturers – Mattel, for instance, releasing its Intellivision (‘intelligent’ + ‘television’) game system in 1979, a system that the company described as a ‘master component’ that could, according to a 1980 television advertisement, ‘change your family’s life’ (Mattel, 1980). Over subsequent decades, game companies have increasingly committed portions of their research and development budgets to projects aimed specifically at automating those elements of the game development process still driven by human creativity: level design, plot development, character dialogue and sound. In 2001, for example, Epic Games collaborated with North Carolina State University Professor R. Michael Young and his Liquid Narrative Research Group to

develop the Mimesis System: ‘an implementation of an intelligent controller for virtual worlds that generates and maintains a coherent, narrative-based storyline’ (p. 77). According to the Mimesis System’s creators, the underlying architecture ‘combines current research work in AI planning and natural language discourse generation with the real-time control of an existing commercial game system, Epic Games’ *Unreal Tournament*’ (p. 77).

As research on the production of algorithmic and adaptive narrative evolved, so too did research on algorithmic and adaptive sound. By 2003, researchers had begun to seriously explore the possibility of algorithmically generated sound and music that responded to player actions – no human composing necessary. The import of this development was at least twofold: first, it had the potential to deliver soundscapes that were more ‘organic’ than those deployed through a conditional and prerecorded system (‘IF player enters this area, THEN play this music/sound’), and second, it recognised that the control of the player (i.e. ensuring near-continuous immersion in the game) depended on the creation and maintenance of a seamless, multimodal, multisensory and adaptive experience. As Jonathan Fish puts it, ‘the surrogate interactive audio soundscape of the video game becomes the vehicle that makes this interactive partnership between user and machine possible’ (2003, p. 4). A ‘smart’ game, therefore, should not only adapt to player behaviours but also do so such that the perceptual sutures holding together the player’s inputs and the system’s outputs appear as ‘organic’ (i.e. natural, normal and intuitive) as possible.

The technologies enabling algorithmic narrative and algorithmic audio have continued to mature and even merge. For example, in 2013, Anthony Precht and his collaborators at Open University’s Centre for Research in Computing developed an algorithmic music generation system that attends to both player behaviours and algorithmically generated narrative elements to create an experiential environment free of dissonances that could be ‘distracting or even jarring for the game player’ (Precht et al., 2014, p. 1). The system, the researchers note, is designed to appropriate ‘the game’s internal logic’ such that it ‘monitors the narrative and specifies desired musical features for the music generator’ – the end result of which is to enable the music generator to ‘respond to [the player] in such a way that it seems the music is tailored to the player’s real-time narrative progression’ (p. 1). Fading the edges – of sound, sight, tactility and even creative origins – are thus as important to smart game development as they are to smart city development.

This process of ‘pervasive integration’ (Thorne & Griffiths, 2014) extends the human into the environment – and vice versa – in both contexts: smart games at the personal scale and smart cities at the societal scale. Batty et al. (2012) specifically make this point about smart cities, though ‘games’ may be readily swapped for ‘cities’ to make the parallel argument:

Smart cities are often pictured as constellations of instruments across many scales that are connected through multiple networks which provide continuous data regarding the movements of people and materials in terms of the

flow of decisions about the physical and social form of the city. Cities however can only be smart if there are intelligence functions that are able to integrate and synthesise this data to some purpose, ways of improving the efficiency, equity, sustainability and quality of life in cities.

(p. 482)

Viewed from this perspective, ‘smartness’ signifies the integration of systems and subjects and signifies the vanishing of any interface between the two.

The proliferation of smart game research since 2015 confirms that interest in the field is growing. Technologies are currently under development that add to the list of surveilled player variables: emotions (Taub, 2019; Jaiswal, 2019), eye movement (Huang et al., 2019; Abdessalem et al., 2019), mind wandering (Mills et al., 2020) and even sexual attraction (Szczuka et al., 2019). Given the increasing complexity of the modern ludosphere (i.e. the world of game worlds; see Stenros & Kultima, 2018) – ever more interactive, multimodal, nonlinear, immersive and persistent – and its comparable discursive (if not ideological) investment in maximal enjoyment, intelligence in games can provide insights into the smart city. Data acquisition, purpose-built behavioural control algorithms and technologies capable of delivering continuous and seamless curated experiences of safety, comfort, logic and pleasure are the building blocks of ‘smartness’.

The convergence of gamified smart city technologies

All of these trends in game development point towards an end that is eerily similar to the process of neoliberalisation: maximum utility is not best acquired through intentional human engagement and decision-making but rather through the smallest amount of human intervention possible, liberating the automated processes of the game – or the market – from the inefficiencies of humanity. The convergence between smart cities and smart games can be found in gamified smart city technologies, which are, more often than not, championed as some means of boosting public participation. While one might initially read an increase in participation as a laudable goal at the opposite end of a process of neoliberalisation, numerous scholars have noted how the language and culture of public participation have been co-opted to mean an effacement of democratic engagement in service of an intensified neoliberalism (Lee et al., 2015; Fawcett & Marsh, 2014; Moini, 2017). Instead of electoral politics, social movements and democratic engagement, public participation helps create para-governmental processes that provide the feeling of participation while avoiding the messy and slow reality of actual participation (Arnstein, 1969; Kelty, 2019). And these gamified smart city technologies permit a technocratic approach similar to smart games: citizens are individually surveilled rather than democratically engaged, resulting in a near-automated, data-driven response that provides the minimal necessary placation so that the system can continue without interruption.

Consider the City of New Orleans’s process of collecting feedback on the municipal budgeting process: the *Big Easy Budget Game*. This participatory budgeting game began as a simple analogue exercise in public workshops where

participants would move red beans into different buckets to represent budget lines. By 2015, the game had been developed into an online experience with digital beans that automated data collection from citizen players who were instructed to prioritise different budget categories; players most often decided to spend more on public works and less on prisons than the actual New Orleans city government did (Byun, 2018). When participants log in to the game at peoplesbudget.com, they are greeted with an informational video and a webpage that explain the game: how to play and what its implications are for the city (City of New Orleans, 2019). While anyone can create an account and have their say (even if they are not residents of New Orleans), the webpage is careful to note that the data collected are aggregated into a report titled the People's Budget, which is used as a point of comparison to the actual budget. In other words, playing the game uses the time and attention of participants, but their input is largely comparative: public officials can pay attention to or disregard the People's Budget as they see fit.

At the start of the game, the player is provided with an interface showing 29 'buckets' – city departments – that can be funded or defunded in increments of one or 10 digital beans – each bean being worth US\$1 million. The interface also makes clear to the player that there is a minimum budget for certain departments, which are prepopulated with beans; of the 702 total beans, only 317 remain to be allocated. Each of the 29 buckets also contains a button that, when clicked, pops up additional information about the corresponding department. Some of these informational pop-ups include mini-surveys for players to complete and that provide additional feedback on questions solicited by the city. The interface also shows the funding each department received in the previous year, its minimum funding level (signalled by the predistributed beans) and how much external funding the department receives outside of the regular budget process. Upon allocating all of the beans, a pop-up notes that the game is over and offers the player an opportunity to either submit the budget or continue making edits. After submitting the budget, the player is presented with an optional survey that collects additional input about the New Orleans city budget by using a standard online survey.

Josh Lerner, in his book *Making Democracy Fun*, has noted how the theories behind good game design can be used to create smart, participatory processes that are also fun and effective (Lerner, 2014). The *Big Easy Budget Game* seems keyed to the game mechanics Lerner describes, deploying as it does:

- Conflict and collaboration – citizens work together to decide the winners and losers of a portion of the budget;
- Rules – the process, criteria and outcomes are clearly delineated;
- Outcomes – citizens do not know in advance what other citizens will input, but there is a shared understanding of the implications of their decisions;
- Engagement – the formerly analogue and now-digital game offers real-time feedback through a variety of visuals and other cues.

By all appearances, the *Big Easy Budget Game* appears to be a success: it garners significant amounts of participation and purportedly translates gameplay

into efficient budget decisions. While the game is relatively simplistic and can be played in only a few minutes, it is set up in an accessible way that provides just enough gamified fun to solicit a wide swathe of feedback on city budgeting priorities.

Yet the game belies a broader concern around what participation scholar Archon Fung (2008) has termed ‘empowerment’: the relatively tedious process of participation in the game actually only allows players to allocate a fraction of the overall municipal budget, which again is not binding or ‘empowered’. Indeed, the city may well view the game as more of a public relations tool than as a participatory instrument, though the game is promoted as a smart, ‘high quality technology’ (Committee for a Better New Orleans, 2019). For example, the desires of the public to reduce spending on incarceration facilities and increase funding for public works were sidelined through more-conventional budgeting by city officials, who spent the lion’s share of the budget on policing and government salaries. Such seemingly empty exercises call into question the value of certain kinds of smart city technologies (even when those technologies are rendered game-like) or at least the emancipatory and salubrious logic driving the adoption of those technologies. Participation that is first coaxed then mostly ignored is arguably a form of covert disempowerment. Levenda et al. (2020), for instance, have noted that the participatory smart city often reduces participation to ‘tokenism’ and in the best case allows planners the ability to have a sense of public desires even if those desires are not acted on.

The stupid game and the stupid city: questioning efficiency, economic growth and depoliticisation as goals in a ‘smart’ world

Given the rhetoric around smart cities, smart games and the capture of intelligence by a larger project of neoliberal transformation of everyday life, we feel compelled to consider what alternative remains implied, unacknowledged and even rejected in these smart regimes. That is, what, exactly, would a ‘stupid’ city or a ‘stupid’ game entail? This is not because ‘stupid’ is better than ‘smart’ but because ‘stupid’, ‘smart’ and the gradations between them constitute what Theodor Adorno would term a ‘constellation’ (Adorno, 1981), a configuration of practices, discourses and ideologies that energise meaning making in different ways, depending on one’s perspective.

If the smart city is defined by a strong pro-business state ethos, people-centredness and a network of aware, adaptive surveillance technologies, then the stupid city would be defined by a set of characteristics most notable for being less invasive, less responsive and less proprietary. The stupid city, in other words, would be one that advances no consistent agenda (save for hospitality and joy), has few ready-to-hand mechanisms for managing change (except those ensuring inclusion) and requires little more than a rudimentary information-sharing infrastructure for its common utilities, services (e.g. roadways, waste disposal and power grid) and social commitments.

And if the smart game is defined by adaptive storytelling, generative algorithms for audio, graphical and level design elements and a robust network of player-facing sensors and metrics, then the stupid game would be narratively univocal; visually, acoustically and tactily precomposed; and largely ignorant of the player's behaviour patterns, strategies and abilities. The stupid game, like the stupid city, would not be used to compel 'players' towards particular kinds of engagement (e.g. 'maximally enjoy yourself in these ways') but would instead serve as a phenomenological palette and platform through which inhabitants could work and play with any available resources.

'Stupid', then – whether in reference to urban spaces or games – signals an experiential framework that is either largely unmanaged (enabling considerable self-organising at the local level) or completely managed (enabling responses from adoration to rejection). Stupid games and stupid cities, in other words, depend on their users to be smart. Seen this way, smart cities and smart games do not occupy a space in some progressive sociotechnical vanguard but rather inhabit a mercurial space where technologies aim to guide consumers towards desired, idealised behaviours and experiences through a combination of suggestions and adaptations provided in response to inputs derived from consumers. 'Stupid' cities and games do not offer consumers 'custom', 'personalised' or 'unique-to-you' naturalised experiences and thus minimise the enthymematic mechanism in 'smart' cities and games that simulates variety in predigested, commodified and convenient packages.

Since the mid 1990s, a number of large-scale game projects were developed at the intersection of smart and stupid cities and games, often (though not always, as in the case of those expressly designed to market other products) refusing the rubric of instrumentalisation, practical output and progress, even as they repurpose urban and other spaces into gameboards and playgrounds (Garcia & Niemeyer, 2017). Typically called alternate reality games, these public-facing experiences rely on all manner of technologies (including those deployed to smarten cities, such as webcams and municipal Wi-Fi networks) and generally begin with a fixed set of ludic prompts (e.g. solve five interconnected puzzles). However, alternate reality games unfold according to how the community of players – not to mention bystanders and the materiality of the city (including its technologies, smart or otherwise) – interact. An alternate reality game in Kansas City, Missouri, will thus play out differently from one in Tucson, Arizona, despite starting with precisely the same rules and objectives. The story of the game unspools in real time, principally created by the players as they interact with each other, the game's prompts and the material and electronic environments around them.

The *Jejune Institute* alternate reality game (or 'experience', as initiator and cocreator Jeff Hull calls it), for example, took place over the course of three years (2008–2011) in San Francisco, involved more than 10,000 players and became so elaborate – plots, subplots, heroes and villains – that it inspired a documentary (Kiberd, 2015). At the same time but on the other side of the country, the Smithsonian American Art Museum in Washington, DC, initiated *Ghosts of Chance*, an alternate reality game designed to familiarise the public with underappreciated

elements of the museum's collection. This game attracted more than 6,000 players and routinely had them interacting with strangers and with new parts of the city over the course of three weeks. There have been a host of others: *Reality Ends Here* is an alternate reality game for incoming students at the University of Southern California's School of Cinematic Arts; *DEMA* involved thousands of fans of the band Twenty One Pilots and occurred mainly online; and *The End of Days* occupied numerous cities and more than half a million people in nearly two dozen countries. This kind of active engagement with the built environment and its inhabitants – that is, the remapping and reworking of the city, its technologies and its denizens through new and hybrid interactions and navigation – depends not on the remaking of cities by outside consultants and technology companies but on the playful and creative work of a city's own inhabitants. While prompts are provided, the design work and management flow from the players' effecting a smart system. Indeed, the people swept up in alternate reality games often report that they have experienced their environs in new ways, seen locations they have never visited and encountered neighbours they would otherwise never have met (Smith, 2015; Conway & Innocent, 2016). They also fashion their own (albeit temporary) conceptions of city infrastructure, from spatial organisation to logistics to behavioural modification. Even something as narrative-less and purpose driven as geocaching (geocaching.com) can have similar effects simply by challenging players to find a hidden object through global positioning systems – one among millions of such objects in thousands of cities in countries all over the world that local people have secreted away near places they find interesting.

What these and related technologically enhanced geolocate experiences suggest to us is that the facets that make a city – and a game – truly smart are not the technologies and systems that monitor and adapt the urban or ludic space to match preconceived end point solutions such as marketing and promotion. Rather, smart cities and smart games are made so by the people who occupy and engage with them. Anything that stands in the way of people making their cities more liveable for all inhabitants – not just the wealthy ones – seems not smart so much as short-sighted or, worse, techno-fetishistic and exploitative.

The human city

We are thus decidedly in praise of the stupid, at least when it comes to games and cities. The regime of stupidity, we propose, appreciates the slow, reflective, critical practices that have proven invaluable not only for conventional programmes of self-improvement but also for the interpretation of big data and the humanisation of and playing with/in the most advanced built environments. In so doing, the regime of stupidity can also help blunt smart technology's damage potential, especially when such technology is hastily implemented in various kinds of city spaces. Jones and McCoy (2019), for example, flag 'the datafication of student life' – that is, the zealous documentation of students 'in digital dossiers consisting of academic, social, behavioral, and even emotional markers' (p. 54). Without an analytical approach that recalls data's constructedness and the fact that

data both originate from and are attached to real human beings, such efforts – which, as Jones and McCoy note, form the basis for how ‘institutions run their descriptive and predictive analytics to develop insights’ (p. 54) – lead to the building of ‘smart’ homes, schools, neighbourhoods and cities on the assumption that data are objective. By treating data ‘as pure evidence’ and using a process that ‘does not motivate some to consider the “made into” and “considered as” characteristics of data-as-documents’, developers (of cities, games and schools alike) fail ‘to underscore the sociotechnical mélange in which data exist’ (p. 55). The result, suggest boyd and Crawford (2012), is purportedly people-centred responsiveness and adaptability that occurs in a state of ‘apophenia’ – that is, ‘seeing patterns where none actually exist’ (p. 668). What emerges are cities, games and other ‘smart’ systems that are designed around neat, predictable, data-fied ‘people’ rather than around the messy, contrarian human beings and their ad hoc communities that actually populate the Earth. Smart system evangelists (or apologists) would argue that such systems are simply not smart enough, although of course the complex reality of the human condition may mean that they never will be.

Avoiding the ‘problems of noise accumulation, spurious correlation, measurement errors and incidental endogeneity’ endemic to big data and their analysis (Allam & Dhunny, 2019) – particularly in the face of the real benefits that big data analytics *can* yield – is difficult, to be sure, but it is also necessary. Indeed, this necessity is an ethical responsibility for engagement with the city – not only for urban planners and other ‘smart’ enthusiasts, but also for elected leaders and the general public. To refuse this responsibility is to invite and empower ‘zones’ (Ong, 2006) or ‘technologies’ (Roy, 2019) of exception rather than zones and technologies of hospitality (Roy, 2019, p. 766). That is, to refuse is to welcome the ‘cruel’ city, a constellation that subjugates rather than liberates its inhabitants. There is decidedly nothing smart about that.

Note

- 1 The quoted currency amounts are in Canadian dollars.

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9 Expanded phenomenologies

Leveraging game engines and virtual worlds in design research for the real

Matthew Seibert

It matters what thoughts think thoughts. It matters what knowledges know knowledges. It matters what relations relate relations. It matters what worlds world worlds.

—Donna Haraway, 2016

Experimental play: as varied as the bodies we inhabit

The air is heavy like hot breath. With a cool drink in hand, my body's sweat is undiscernible from its cool wetness. I push forward through the air's thickness, alternating between a search for respite from the summer's heat and falling towards the seductive vibrations of an accordion and drum kit. A soft spot in my heart has grown for Zydeco. Bars prop their doors open to lure in passers-by, their invisible springs of conditioned air drawing crowds like a streetlight its spiralling moths. A slight apologetic wave is given in passing by a careening gaggle of sorority sisters as I sidestep their blitz. Time speeds up briefly in the interaction but then slows black down to its usual syrupy rhythm. Not unlike the churning, muddy waters on the other side of the levee. I continue on, watching my step off the curb.

I can hear the clink of drinks and white noise of chatter to my right. Pressing the joystick forward, my left foot steps over a puddle, vestige of an afternoon shower likely, as a storekeeper eyes me suspiciously. The air carries its humidity visibly, holding the lampposts' light in its volume. An expression of time's slow passage, a tree sways gently in the breeze down the block. I look up using the controller, catching a couple steal a kiss on a balcony under the moonlight, all too common in this southern city of easy living. The marbling of the night sky and its clouds shift softly. I move forward, pulled by distant action, almost feeling the heavy night air, hot like breath.

Likely read as one experience, the opening paragraphs are distinctly two. The first is a clear memory of when I lived in New Orleans, having cut my design teeth in the soggy landscapes of Louisiana. The second is from Hanger 13's *Mafia III* videogame. Set in New Bordeaux, a fictional projection of New Orleans, *Mafia III*

Figure 9.1 An homage to a 1960s New Orleanian streetscape in Hangar 13's *Mafia III*.

is not only a stereotypically violent action adventure game but, more interestingly, an intentionally revealing representation of a turbulent time in US cities, immersing the player in the volatile dynamics of 1960s racism and antiwar activism. Both of these experiences of the built environment, the real and the played, were mediated. The first was mediated by my sensorial experience of the city's oppressive heat and humidity, tantalising sonic textures and distinctive meter of time. The second was even more obviously mediated via pixels and photons, which were designed by game developers but which similarly by intention and memory I, the player, carried into the virtual. Both are veritable hybrid constructions of body and environment, perception and affect, material and immaterial, where the virtual can carry into and colour the physical as much as the converse. We are cybernetic beings living in increasingly cybernetic worlds, our being-in-the-world co-constituted by the real and the 'other real', the digital.

This chapter posits the computational medium and representational tool of the game engine – the software developed for the production of videogames – in thinking about the experience and making of urban space through an expanded reading of the body. Here the body is understood not only through its material propensities and constraints but also through its larger expression in the mosaics of embodied experience and sociocultural collective dynamics. The chapter builds on the theorisation of embodied experience following French phenomenologist Maurice Merleau-Ponty's (2012) concept of the body-schema, or bodily way of knowing the world; cultural geographer John Wylie's (2006) definition of landscape as the materialities and sensibilities with which we see; and digital media scholar Brendan Keogh's (2018) play of bodies bridging across our

shared physical spaces and the virtual landscapes of videogames. Establishing and expanding on the conclusions that landscape and self are co-constitutive, each dynamically forming and influencing the other through material and immaterial means, and that the body can be extended across the physical/virtual divide, arguably game engines uniquely provide a new design heuristics of experimental play that recognises and employs spatial intelligence as sensory, experiential and contingent in studying and designing the built environment. In other words, our constructed world could (and should) be informed by the diverse body-schemas of those who occupy it. The virtual worlds crafted through game engines offer a novel, prismatic palette of cybernetic phenomenologies that can be used to iteratively, quickly and effectively work through design ideas, hypotheses and plans across the physical/virtual divide. This is a design research methodology and computational tool for not only recognising but also rigorously examining urban spatial intelligence as embodied and lived, conditional and unstable, as varied as the bodies we inhabit. With these new readings of cities, new possibilities of city knowing and city making can emerge.

Our virtual worlds are extensions of physical landscapes and the physical of the virtual. Although both are initially experienced through bodily perception, be it the heavy humidity of a Louisiana summer on the skin or the audiovisual haptics of screen, speaker and controller, more elusive forces like cultural values, individual memories and expectations begin to colour readings of space and place as embodied affect. Individual bodies and how they relate to and make meaning in the world are assemblies equally biophysical and affective (Meyer, 2015). How might we recognise this entanglement and unpack its dynamics for a future understanding of the lived world and foster actionable insight in designing where and how we live? This chapter offers up the design potentials of the game engine as a newly accessible, uniquely powerful and culturally significant model system of embodied perception in pursuit of new knowledge of the built environment's intrinsic complexity. Game engines are a combination of 3D modelling software, physics simulation and effects generation facilitating the creation of interactive, immersive and fully navigable virtual worlds. The user assumes a godlike perspective and power to craft the rules and audiovisuals of alternate realities, limited only by their imagination and proficiency with the software.

But let us tread carefully. It's easy to find oneself genuflecting at 'The Cathedral of Computation', bowing – with enthusiasm at times, resignation at others – to the powers of digital assistance, be it the trends of parametrically modelled architecture and urban developments or the universally pervasive algorithms of Google searches, Netflix recommendations and Amazon suggestions, their everyday influence too big to resist (Bogost, 2015). The 'algorithmic culture' doesn't stop at the individual in front of a computer, however. This techno-theocracy, or world view dominated by an adoration of digital conveniences and optimisation, extends to the built environment. In both theory and practice, from Paul McFedries's *The City as System [Technically Speaking]* to Alphabet's (Google's) Sidewalk Labs project, the city has been envisioned as an assemblage of code and hardware, an electronic system open to hacking, reprogramming and optimising (McFedries,

2014). But, as Shannon Mattern has rightly pointed out, ‘a city is not a computer’ (2017). This is significant in that metaphors frame and inform how we see and live in cities, the design processes with which we construct cities and thus the material spaces and operations of cities. Mattern calls for ‘new models for thinking about cities that do not compute. Instead of more gratuitous parametric modelling, we need to think about urban epistemologies that embrace memory and history; that recognize spatial intelligence as sensory and experiential’ (2017). There exist complexities and nuances, emotions and beliefs, a variety of bodies and sensorial experiences that transcend and complicate computation and optimisation.

With this in mind, it might seem strange to posit an acutely computational medium in thinking about the experience and production of the built environment. But rather than being a procedure in pursuit of optimisation, the game engine is presented as a heuristic, iterative practice in creative reflection, turning the computer on itself – a technocratic coup of sorts, subversively dethroning the algorithm’s totalitarian rule from within. The creative act of spatiotemporal making, deconstruction and recomposition as afforded by game engine software results in a reflexive practice of seeing one’s self see. Or to put it Donna Haraway’s words, a reflexive practice of worlding, a rendering and projection of a world view. It is thus a powerful, experimental and playful view into one’s unique, variable and bodily being-in-the-world.

To demonstrate the co-constitutive dynamic of self and landscape across physical and virtual worlds and what it means for design of the built environment, the slippery conceptualisations of landscape will first be explored in an animate context. With this solidified as the contextual foundation to build on, distinct phenomenological studies of architecture and videogames will then be unpacked to illustrate one’s bodily way of knowing the world and how that can be extended across media. Organised through phenomenological categorisation, this scaffolding will serve as an analytical framework to survey several example virtual worlds and game engine products, including AAA developer DICE’s *Mirror’s Edge*, indie game designer Mavros Sedeño’s *NaissanceE* and unpublished academic projects. The lessons and insights gleaned from this survey will then support game engines as a proposed design heuristics where explicitly nuanced, variable and contingent concepts of self and environment can produce new knowledge for engaging with our complex and shared world. This is a heuristics of experimentation, of trial and error, of exploratory analyses, where no optimal answer exists but through which increasingly improved answers do. In summary, this chapter builds a philosophical foundation of landscape grounded in embodied experience through which to read existing game engine products, casting new light on their cultural value and revealing new potential of their medium to inform the reading and designing of the built environment.

Defining landscape

Landscape is a way of seeing the world.

–Denis Cosgrove, 1985

'Landscape' is a slippery word. The modern vernacular has deployed this term across a plethora of use cases and disciplines. 'Landscape' has been appropriated by various spheres of thought, denoting the larger context – physical, social, cultural, technological, imaginary – against which exist subjects and objects, agents and events. For the purposes of this chapter, I use it to refer to the built environment in all its permutations. From the front stoop to a public park to a city's urban fabric, landscape is not just backdrop but a key protagonist in city narratives.

Cultural geographer Denis Cosgrove's definition of landscape as 'a way of seeing the world' (1985) is quite productive in its formulation. Understanding landscape as an ideological concept, he was uniquely interested in the historically contingent cultural constructions of space and place, the visual and textual works that produce meaning and metaphor of a given community or culture (Cosgrove, 1984). (This was largely focused on Western culture.) The capturing and managing of landscape through varied representational technologies – picturing, surveying, mapping – is how a culture represents its surrounding world and its relationships to it, both as a self-conceptualising practice and as a form of communicating the same to outsiders. In other words, landscape is a 'cultural image, a pictorial way of representing, structuring, or symbolizing surroundings' that tells as much about the surroundings as about those that occupy and represent it (Cosgrove & Daniels, 1988). This reading of landscape is useful for the numerous and diverse groups of individuals employing the term for various objectives in contemporary society, particularly in relation to the overlapping physical and virtual worlds discussed in this chapter. It also reveals the constructed nature of landscape, projected into a space by a social, collective body. Landscape is a social construct produced through representation, varied and diverse in its views. It's thus a term usefully flexible in its interpretation and application, but not without shortcomings.

Landscape could perhaps be more accurately 'name[d as] the materialities and sensibilities *with which* we see' (Wylie, 2006, emphasis added). Where Cosgrove frames landscape as a one-sided conceptualisation of space and place by the human inhabitant, geographer John Wylie contends that landscape is neither something seen nor a way of seeing the world, 'neither empirical content nor a cultural construct', neither object nor subject. It rather 'adheres within processes that subtend and afford these terms' (2006). Landscape is a highly dynamic, relational co-constitution between self and environment. A two-way fusion with equally acting agents, 'landscape comes to occupy the folding inflection between immanent topographies and particular cultural and historical genres of visual aesthetics, performance, and modes of occupation' (Wylie, 2006). Seen this way, an actualisation of self and world, both dynamic in space and time, landscape is the reciprocally constitutive dynamic between the biophysical materials and sociocultural materialisations of one's environment against and with the sensorial perception and sociocultural affect of one's body. Landscape and self shape and define each other physically and conceptually. This is not merely expressed through visual or textual representation by a collective body, as Cosgrove argues. This is a live and changing multisided relationship between acting body and an

acting environment where agency lies in both the body and its host world, be it organic, mineral or temporal.

To take the opening example of walking through New Orleans, Hanger 13's *Mafia III* is one culture's picturing of 1960s USA in South Louisiana. Fictionalising New Orleans, this culture of game developers nonetheless mapped and imaged an interactive world based on research, common belief and – hopefully – a bit of onsite experience. As a result, a landscape is represented not just as a virtual space or environment but as an ideological concept of a particular place in a particular time, complete with the meaning and metaphor of those that live there, 'the world about them and their relationships with it' (Cosgrove, 1984). Whereas the game is a designed experience with emergent but limited results, my physical traversal of New Orleans exemplified Wylie's more multivalent reading of landscape, one where the body and environment are continuously engaged in co-constitutive actualisation. The weight of the air influences my movement, slows my sense of time; the music of Zydeco, born from the swamps and marshes of South Louisiana, draws me through space in rhythmic ambles. I also carry biases and perspectives into this trip, conveyed by my avoidance of the presumed sorority members and an embodied association of time's passage with the waters of Mississippi River. There is significant meaning in this streetscape milieu emerging from the materialities and sensibilities with which I experience it.

There is quite a bit to disentangle here, though in a lot of ways entanglement is the point. Moving forward with the conceptual foundation of landscape as the materialities and sensibilities with which we see, self and environment reflexively constituting one another, the tools of phenomenology can provide a means to instrumentalise this in design practice as both a conceptual and lived position.

Architectural phenomenology and a play of bodies extended through videogame space

The practice of phenomenology can attune me to the disorientation and disquietude of others. It can be a way to unveil the particularities of different embodiments and to bring these embodiments to bear on the theoretical discourse of what bodies, institutions, and architectures can do.

–Bryan E. Norwood, 2018

In architectural discourse, it's important to distinguish between the philosophy of phenomenology and the architectural methodology referred to as phenomenological. German philosopher Edmund Husserl and other early practitioners employed phenomenology 'as a philosophical practice that peels away the abstractions obscuring the lived world' (Norwood, 2018). The goal was to get at a universal essence of being-in-the-world. This philosophical project was most influentially repackaged and brought into architectural discourse first via the teachings and writings of Christian Norberg-Schulz and Jean Labatut, in an attempt to establish a uniquely academic architectural theory in response to modernist critiques of the

Beaux-Arts system of education (Norwood, 2018) (Otero-Pailos, 2010). It was particularly focused on how large- and regional-scaled patterns of spatial organisation enabled individuals to make sense of their place in the larger picture: ‘the symbolic structuring of places and settlement patterns where broadly philosophical, theological, and cosmological ideas were seen as being mapped out across the landscape’ (Hale, 2013). The more contemporaneous version of architectural phenomenology then began coalescing in the 1990s, when theorists and practitioners more comprehensively transfigured the philosophy into a methodology of design, privileging the experiential, material and phenomenal knowledge gained through embodied subjectivity and intentionality. This was an architecture of the seven senses – a multisensory architecture of ‘the eye, ear, nose, skin, tongue, skeleton and muscle,’ as architect Juhani Pallasmaa has contended (2007).

The work of Merleau-Ponty, intellectual progeny of Husserlian and Heideggerian phenomenology, and his novel positioning of the body as our primary relation to the world – a pragmatic, ready-to-hand being-in-the-world (Merleau-Ponty, 2012) – is invaluable in understanding the philosophical background of embodied experience as put forth by Pallasmaa and other phenomenologist-architects. Merleau-Ponty’s work aids in understanding not only physical landscape but virtual landscape as well. He termed the generative, embodied perception of the world as ‘body-schema:’ a primordial ability to engage – and through this, make meaning – in and with the world, a set of bodily capacities activated and put into operation with and against a surrounding environment (Merleau-Ponty, 2012). In other words, ‘Practical bodily action and patterns of behavior taking place within structured environments could therefore be seen as an emergent process out of which the concepts of both the self and the world gradually come to be’ (Merleau-Ponty, 2012). The body and its corporeal senses, abilities and limitations construct our landscapes, cultures and selves – not dissimilar to Wylie’s definition of ‘landscape’ as the materialities and sensibilities with which we see. ‘The world is not what I think but what I live,’ as Merleau-Ponty would put it (2012). There is no Cartesian splitting of mind and body. We make meaning through our navigation of the world, habitualising ways of moving through it, which are then perceived *through* as they fall into the background of our perceptions (Keogh, 2018).

Merleau-Ponty employs two examples as illustration of his body-schema: a cube viewed from one angle and a blind man with a walking stick. When we perceive a cube at one angle, we are only seeing a few sides of it, but through experience, through successive viewings of its other sides as one rotates it hand, we can produce the knowledge of a cube that can then be applied during a partial viewing (Merleau-Ponty, 2012). This is one way that embodied experience produces knowledge: through constant, subjective and situated perception. Another representative example is through objects or instruments, such as a walking stick. Through continuous use, the walking stick begins to feel like an extension of the body (Merleau-Ponty, 2012). Its habitualisation over regular use, finding the curb when crossing a street, tapping against the threshold of a doorway’s dimensions, begins to fall into the background of perception; the stick and body act as one, its user almost losing sight of the tool as independent of the body. Merleau-Ponty calls

this ‘a knowledge in our hands’ (2012) because it is incorporated into embodied experience with and against the world. The role of embodied perception and its ramifications is no mere theoretical exercise, as it has gained significant traction in present-day investigations in fields such as cognitive science, human–computer interaction and neuropsychology (Norwood, 2018).

Carrying this line of thinking into virtual worlds and interactions with virtual worlds, Brendan Keogh asks in *A Play of Bodies: How We Perceive Videogames*, ‘How does our embodied sense of perception constitute – and become constituted by – the phenomenon of videogame play?’ (2018). Crediting Merleau-Ponty’s influential work in embodied perception, Keogh also critically recognises the phenomenologist’s limiting focus on *the* body, a singular, stable and essential body. Invoking feminist theorists like Donna Haraway, Iris Marion Young and Gail Weiss, Keogh employs their assertions of the ‘pluralist, partial, and situated ways bodies have always been constituted by and as part of the world’ to establish embodiment as ‘always partial and mediated’ (2018). This takes into account how the social world affects our being-in-the-world – its unescapable constructs of class, gender, race and sexuality, for example. There is thus not one essential body informing our embodied experience of the world but a multiplicity of unstable bodies continuously pushing and pulling against other bodies, both human and nonhuman. But perhaps most interestingly, and most relevant for our discussion, this essentially unstable ‘intercorporeal affair’ (Norwood, 2018) is not limited to the physical world. The digital avatars and virtual spaces of videogames can be just as influential and reciprocal as the social constructions and built environments of our respective societies. But unlike Merleau-Ponty’s walking stick that one habituates as knowledge in hand, videogames extend our bodies across time and space, across the material divide of screen, controller and speaker (Klevjer, 2012):

If film experience is . . . a ‘play of images’ that flickers between incorporated and resisted, looked at and looking, then videogame experience is a play of bodies that flickers between present and absent, corporeal and incorporeal, immanent and transcendent, actual and virtual, ‘me’ and ‘not me’.

(Keogh, 2018)

In the opening walkthrough of *Mafia III*’s fictionalised New Orleans, as I navigate past lit doorways, dawdling groups and glowing lampposts, there are times when I lose myself in the virtual scene, taking offence at programmed slights of digital residents, feeling confined in crowded spaces and smiling at the sensorial delights of a re-created New Orleanian streetscape. There are also times I’m pulled back into the physical world, the sound of an incoming text message, the pang of hunger and the guilt of my real-world to-do list hanging over me. Then there are the conflations, the times my memory of a smoky bar provides me a smell to accompany a virtual scene, the real feeling of humidity hanging across my body evoked by a light haze rendered in transparent pixels, the bursts of coded chatter triggering nostalgia for a city I no longer occupy. Engaging this virtual city catalyses a certain transcendence of time and space, my body here and now entangling not

only with the virtual body of my digital protagonist and his programmed social constructs of being a Black American male in 1960s USA (e.g. prejudice by shopkeepers is coded to occur) but also with my bodies of time past, rendered in memories of New Orleans. This ‘play of bodies’ is at the heart of employing game engines as new models to think about cities that embrace the process of being-in-the-world; that don’t shy away from the complicated nature of memory, history and affect; that not only recognise but also value urban epistemologies as sensory and experiential, as pluralist, partial and situated, mediated by culture, time and environment. Virtual worlds, inhabitable by code and controller via intercorporeal extension, thus empower various, diverse and meaningful ways of occupying, interpreting and reflecting on lived space.

A survey of games to probe self and landscape

We are outnumbered by virtual worlds, overwhelmed by virtual architecture. Videogames and digital art have furnished us with a hundred thousand matterless forms – landscapes where no rock or earth has ever been present, cities founded on depthless skins of image and texture, expanses that will never see the light of a true sun. And yet, somehow there is material here, a new kind of matter.

–Gareth Damian Martin, 2017a

Figure 9.2 A spatialised history of digital architecture in NaissanceE.

Source: Limasse Five, Mavros Sedeño, 2014

If landscape is the materialities and sensibilities with which we see, environment and self co-constituting one another, and videogame experience is a play of bodies across physical and virtual landscapes, then game engines uniquely enable a new design heuristics that recognises and leverages the spatial intelligence that emerges through embodied living as experiential, entangled and contingent. This spatial intelligence as expressed through the many virtual environments of game engine software are acts of intentioned world building, revealing unique and meaningful positions towards one's surrounding world. To understand the value of this, let us look to a survey of finished products (i.e. videogames, walking simulators, 4D academic sketches, etc.) through the lens of embodied experience: Wylie's materialities and sensibilities, Merleau-Ponty's body-schema and Keogh's play of bodies. Game engine products can be windows into a pluralist, partial and situated body-schema. These are novel views into a generative, embodied perception, a primordial ability to engage – and, through this, to make meaning – in and with the world. The fact that it is virtual makes it no less powerful in the physical world as the intercorporeal bridge across the material threshold of screen is as real as social constructs like race and class or, in other words, as real or unreal as we collectively make them, a process often involuntary and unconscious.

Virtual worlds enable one access to a wide swathe of the materialities and sensibilities – the sense organs and sociocultural affects – with which we understand ourselves and our built environments. Although Pallasmaa's seven senses encompass slightly more than the five traditional senses, they still fall quite short when thinking about how one's self reciprocally engages with one's landscape. His eye, ear, nose, skin, tongue, skeleton and muscle overlook essential and elemental ways of reading and living in the world. Chronoception, or the perception of time; one's sense of agency in the world; and how memory influences one's bodily engagement with their surroundings (Treib, 2009) are often underserved, if not completely overlooked, in Pallasmaa's phenomenological methodology. Game engines – in their provision of modelling objects and spaces, establishing the laws of physics and designing interactivity, narrative and the look and feel of a place – empower users to creatively compose, control, curate, probe and interrogate all of these means of experiencing place in some way through iterative experimental play. (It's true that senses like smell and taste can't quite be captured through present gaming platforms, but there are ways to still engage with these indirectly through synesthetic strategies.) In applying these concepts to example projects to illustrate their instrumentalisation in the study and design of the built environment, Pallasmaa's architecture of the seven senses might be better reimaged as an architecture of myriad materialities and sensibilities. Three nascent and non-exhaustive classifications are offered as an organisational framework: the *traditional* (sight, smell, etc.), the *untraditional* (sense of temperature, hunger, balance, etc.) and the critical *organ-independent* (time, agency, and memory).

Drawing on my own research and teaching in conjunction with commercial videogames, from student work to blockbuster titles, I here write a brief survey of precedent projects to reveal the potential theory and practice of city knowing

Figure 9.3 Abstracting the spatial qualities of openness and enclosure of a downtown outdoor mall.

Source: Wanyi Li and Xioawei Lin

and city making through game engines. These examples will be presented per the framework from earlier: organised in the traditional, the untraditional and the organ-independent. The traditional expands on the visual hegemony of architectural representation, taking into consideration additional ways that we experience place (sounds, textures, etc.). The non-traditional directly engages historic representational shortcomings, attempting to capture intangible concepts such as spatiality. Finally, the organ-independent addresses experience beyond sensorial organs, dynamics such as the experience of time and memory's tangible agency, even gendered navigation. All examples employ first-person perspective and fully navigable 3D worlds, as if the player were embodying their avatar, looking through their eyes to move through the game's designed environments.

Let us begin with the dominating sense of sight. Developer DICE's *Mirror's Edge* is an action adventure game set in a semi-futuristic dystopia, the main character tasked with evading government surveillance in her delivering of messages across a cityscape of obstacles, conduits and threats. Facets that make this project stand out from others in its genre are the many means of movement across an expanded palette of navigable urban surfaces. The player is not constricted to merely walking, running and jumping on horizontal surfaces, which are the limitations of many games. Sliding along power lines, tumbling from roof to roof, shimmying through HVAC shafts and running across walls are integral to successful missions (and stimulating even without an objective in mind). This navigation is of course driven by sight. As one moves through the game, one's eyes are increasingly trained to identify new surfaces that facilitate nuanced urban negotiation. *Mirror's Edge* is also unique in frequently incorporating the character's

legs, arms and torso into the visible scene. It's an effective nudge in intercorporeal extension of the player across the physical/virtual divide. The focused experience of seeing and navigating the virtual environment incrementally trains and encourages the player to see the city outside differently, triggering the sight of urban streets, alleys and roof surfaces as formal configurations to creatively traverse, navigate and overcome in improvisational movement. Evoking the situationists, *Mirror's Edge* can be understood as 'a whole toy box full of playful, inventive strategies for exploring cities . . . [taking] pedestrians off their predictable paths and jolt[ing] them into a new awareness of the urban landscape' (Hart, 2004). In the iterative design research of virtual worlding, new sensitivities to urban form and composition – what the situationists would call psychogeographies – as understood through the designed body, from abled to disabled, can feed into new visions and constructed realisations for a wider public. Might designers cultivate a greater sensitivity to the constraints of physical disability if they more meaningfully embodied the disabled?

Moving from vision and navigation to a study of the auditory, a study in the space-defining implications of sound, is a project by University of Virginia landscape architecture student Gaelle Gourmelon. Inspired by ARTE Experience's *Notes on Blindness: Into Darkness*, a virtual reality journey chronicling theologian John M. Hull's deteriorating vision, Gourmelon's project explores a walk along a residential street during a light spring rain. Through the representation of sound's sources, reflections and reverberations, recognisable space begins to be delineated. The passage of a car on a wet street is seen abstractly and heard concretely, informing the observer of an earlier unknown vehicular vector. Surfaces can be read in how they collect and reflect sound waves, further revealing the physical world to the audience. And permeating throughout is the light patter of rain on asphalt, drops on metal roofs, a drip on bare earth, rendering a soft contextual womb as a sonic backdrop to the punctuation of events. Everything is represented both visually – in abstract pointillism – and sonically, in 3D space as navigated by the user/player. One could just as easily close their eyes and navigate purely through the sonic registrations in headphones, isolating the simulation of environmental acoustics. Urban landscapes are not experienced through vision alone. Sound, be it desirable (a gurgling creek in the backyard) or objectionable (the roar of the Brooklyn-Queens Expressway adjacent to Brooklyn Bridge Park), influences quality of life and thus property values, and it can further exacerbate divisions between, for instance, affluent and marginalised communities. Game engines enable new methods to project such considerations into the planning and designing of such urban spaces. A designer might iterate through design forms to reflect or amplify the gurgling creek through topographic manipulation or hard-scaping or, in the case of the Brooklyn-Queens Expressway, to attenuate or buffer with designed distance, vegetation or landform. The ability to place 3D audio in virtual, navigable space and define its decibel level enables a designer not only a more productive experimental environment to work through ideas as it relates to the sonic implications of site but to communicate those nuanced experiences to a client or relevant community.

The second classification of materiality and sensibility to be considered is in the untraditional: spatiality. Independent game developer Mavros Sedeño's *NaissanceE* is a Borgian exploration of pure architecture. In fact, through it, the player experiences a kind of architectural history (Martin, 2017b). This is not a conventional history of architecture, however:

with its epochs and movements, classicism and minimalism. It is instead a kind of history of virtual architecture, from its primitive low-poly forms, through its obsession with mirroring the tech that produces it, to the open, empty, and increasingly vast landscapes it now seeks to represent.

(Martin, 2017b)

Descending through uniquely urban strata, it's an expression of narrative through the architectural lexicon of openness and enclosure. There is no backstory – no lore, as it is called in gaming culture – and no real objective beyond exploration. It is a part of a genre of videogames derogatorily referred to as a walking simulator. Objectives, narrative and plot are sidelined in an intentional experiment with the conventions of gaming. There's no winning or losing, often no real linearity of progression, just a world in which to walk. In the case of *NaissanceE*, it's about the architecture of space, about intimately engaging with this architecture, negotiating experiences of designed spatial sequences. It's about juxtapositions of tight, almost claustrophobic spaces and of infinite voids. It's an emotional narrative crafted between player and the experience of space. If architecture is ultimately understood as the designing of space, this ability to create truly navigable space is possibly the most powerful feature of game engine products for the designers of our cities. Writing about videogames *Myst* and *Doom*, 1990s classics, new media theorist Lev Manovich writes,

think of [navigable space] as a cultural form of its own . . . it is a new form which may be unique to new media. . . . For the first time, space becomes a media type . . . [that] can be now instantly transmitted, stored and retrieved, compressed, reformatted, streamed, filtered, computed, programmed and interacted with.

(2001)

With minimal effort, designers can craft and share spatial experiences with compelling command. Devoting years of school to reading plans, sections and models, designers are trained to understand and imagine the occupation of drawn space. Clients and the public are generally less privileged with these skills. But the rich, multilayered experience of spaces and spatial sequences can be easily communicated in the medium of navigable, virtual worlds. Spatial experience, including claustrophobia and agoraphobia, and the interstitial spaces in transitions are newly available to designers to study and project within the real-time environments of virtual worlds. The ability to actually move through a formal design concept can be revelatory even for those trained in reading drawings and construction documents. Students of design in particular benefit from this capability.

In contrast to *NaissanceE*'s fantastical exercise in a thoroughly interior architecture – until it isn't – the next project investigates an architecture often ill-defined or undefined by walls or ceilings: the downtown outdoor mall in Charlottesville, VA. As James Corner, landscape architect of New York City's High Line and design theorist, says,

Unlike paintings or novels, there is very little opportunity to wander or turn away from the experience of landscape. Spatially, it is all-enveloping and surrounds us, flooded with light and atmosphere.

(1992)

And yet there still exists distinguishable rooms, corridors and thresholds in this exterior space. They are not simply aesthetic, big or small, tight or open; they constitute a topological field on which we live, situating and realising specific relationships and realisations (Corner, 1992). University of Virginia landscape architecture students Wanyi Li and Xioawei Lin's project brings to light these dynamics, building a series of spaces abstracted from documented experience, and presents them to be experienced, studied and questioned as a sequence or individually. The downtown mall is understood through moments of compression and expansion, buildings and other volumes (bosques, outdoor dining, etc.) rendered as a density gradient of cylinders. This provides for a compelling isolation of spatiality without distraction by texture or urban connotation. By abstracting such intangible phenomena of human experience, one can begin to put words and values to it, potentially facilitating a conversation around its design. Cities are not composed merely of masses but also of voids. The unseen, the felt, are just as crucial to understand in a process as dynamic as a city. The platform of navigable space easily experienced by a public can bring new and important voices to the table and engage community members that might otherwise be disinterested in the inventorying of values and the making of decisions in the design process.

The last projects to be highlighted tackle something even more slippery than sonic forms or spatiality. The first directly engages time's arrow. Chronoception is elemental to how we understand ourselves and our world. The built environment can neither be reduced to a single view (or group of views) like most architectural representation nor be frozen in time (Corner, 1992). As part of the BK BioReactor, a team of designers, scientists and community organisers that studied the microbiology of Brooklyn's hippest Superfund, the Gowanus Canal, I produced a world hybridising past, present and future. As a temporal palimpsest, the spatial relationships and ecological ruptures that define this now-infamous waterway can be understood. Historically a tidal estuary, it's revealing to see its once-verdant portrait juxtaposed with its current dredged, sea-walled and contaminated disfigurement of today. Lev Manovich's valuing of navigable space as a unique and potent medium is particularly relevant here because virtual worlds are importantly distinct from films in their communicative powers (2001). Although film can convey movement through space, it is linear and constrained in its sequencing and choreography. Virtual worlds afford countless views, spatial sequences and

Figure 9.4 A temporal palimpsest of Brooklyn's hippest Superfund, the Gowanus Canal.

Source: the author

potential juxtapositions of scenes as determined by the user's interest and agency. This is increased only when one accounts for how the understanding of time, history and memory underpin one's approach, occupation and imagining of place. Chronoception fundamentally affects sense of place. Noted geographer Yi-Fu Tuan writes, 'What can the past mean to us? People look back for various reasons but shared by all is the need to acquire a sense of self and of identity' (1977). Sense of self can be rendered more robust by facilitating access to the past. The ability to navigate through time and space triggers not only new ways of seeing and understanding the Gowanus Canal but new ways of seeing and understanding the self that occupies it. Through this, it can catalyse new future possibilities for the canal and its residents. Should we strive to restore it to its precolonised state? Or should we find ways to cultivate the best features from all periods? What might this temporal collage mean for those that inhabit and visit the canal? The delineating of a site's period of significance, as labelled by preservation praxis, can be challenged with new visualisation techniques. A romanticised and picturesque past might be complicated by the potential of bioremediating microorganisms in the present, as is the case of the Gowanus Canal. Hybridising multiple time periods of the canal in immersive, 3D space opens one to new imaginings of what the future can look like, how it can perform and what this means for its human community. The designer's imagination has a new mirror to hold up with this virtual world.

And what if that mirror held a reflection of the player themselves or of one's place amid sociological constructions? As one might imagine from its title, From-Software's *Bloodborne* is macabre: its cobblestone roads slickened with blood, its alleyways dark and menacing, its city plagued with violence. But in the atmosphere of its violence lies a fascinating story on the gendered spaces of cities:

‘playing the game as a woman can be an intensely liberating experience’ (Williams, 2019). Women have been found to walk disproportionately fewer steps than men in almost all countries (Althoff et al., 2017). This is typically due to personal safety and the perception of personal safety. The virtual worlds of games can begin to shed light on dynamics plaguing half of the population while practically unseen by the other. *Bloodborne’s*

gamespace is a place where – while real-life cities and their inhabitants slowly learn to accommodate non-male freedom to roam – we can freerun the crystallisation of our environmental fears regardless of gender, wielding a Kirkhammer as the ultimate upgrade from weaponised house keys clenched in a sweaty fist.

(Williams, 2019)

The spaces of this grisly world, from its environmental detail to its narrative arc, aren’t simply the context against which female liberation can be experienced, but rather, ‘they actively manifest it’ (Williams, 2019). The power of this sociological dynamic begs to be employed by those responsible for creating and influencing cities. Residents come in a multitude of bodies, cast across a spectrum of gender even, and yet cities are often designed for the few. The simulations of game engines enable tapping into new populations, new and vital voices of our shared built environment. The social constructions of race and class can be addressed in the design process in revealing and consequential ways. *Maffia III’s* foray into 1960s racism is just a hint at deeper and more-rigorous methods in studying and addressing prevalent inequality across our physical and psychological worlds. It’s time designers engage the full spectrum of bodies and diverse relationships in their contextual landscapes.

The strange, and knowledge-producing, mirrors of virtual worlds

The mirror functions as a heterotopia . . . it makes this place that I occupy at the moment when I look at myself in the glass at once absolutely real, connected with all the space that surrounds it, and absolutely unreal, since in order to be perceived it has to pass through this virtual point which is over there.

–Michel Foucault, 1984

The diversity of interactive virtual environments enabled by an unprecedented level of access to gaming technologies has opened a new heuristics for the study and design of the built environment. This is a methodology of experimentation without optimal solution but nonetheless highly informative, progressive and actionable. These virtual worlds are strange – and illuminating – mirrors of not only our own lived world but also our lived selves, ‘simultaneously represented, contested, and inverted’ (Foucault, 1984). In line with the work of ecofeminist, cyborg theorist Donna Haraway, we could say not only that physical worlds world

Figure 9.5 *Vane*'s multispecies entanglement expressing the nonhuman perspective of seeing the world.

virtual worlds but also that virtual worlds inform physical worlds just as powerfully: worlds worlding worlds. Game worlds can catalyse new ways of seeing and being in the physical world, new world views opening new means of negotiating urban and rural realms. They can calibrate our materialities and sensibilities with which we see in revealing ways, understanding the built environment purely through sonic vibrations, for example. They can facilitate a study of spatial experience, giving material to the immaterial, form to the formless. They can manipulate time's arrow, collapsing temporalities in imaginative and actionable ways. They can reveal the inequity of our built environment across demographic spectrums. And – especially promising – they can even begin to show us our cities from the perspective of nonhuman bodies, such as the landscape architecture office Scape Studio's 'fish view' experiments with virtual reality and their living breakwaters design for Staten Island or the multispecies entanglement of Friend & Foe's *Vane*. The partial survey hinting at the instrumentalisation of game engines in the design process is not exhaustive, but it begins to illustrate how such technologies and techniques can be employed with great versatility, from the cultural geographer gathering data on use scenarios to the designer iterating in her studio on the next waterfront park.

There are many ways to advance knowledge. What is being proposed here, the sandbox of game engines as a new design heuristics, can be understood as a 'model system', a term taken from biology. This is the field of biology's primary tool because biological materials are intrinsically variable and complex, resistant to universal laws and axioms from which the exact sciences like physics are structured; rather, they always possess an ability to surprise, to mutate (Creager et al., 2007). The knowledge generated

around exemplars rather than around fundamental laws not only bridges the hard and soft sciences but enables the production of something like lawlike

knowledge in disciplines in which laws seemed incapable of capturing the specificity and complexity of organisms, geological processes, or human productions.

(Creager et al., 2007)

Laws are perhaps not produced, but a ‘reliable, systematic knowledge’ certainly is (Creager et al., 2007). Game engines produce worlds meeting all the same characteristics of common biological model systems, such as the common house mouse or fruit fly: they’re cheap and plentiful (Unity and Unreal, the two most common game engines, have a free pricing tier and can create as many worlds as one has the time); they’re inexpensive to house (digital storage halves in cost every few years); they’re straightforward to propagate (they’re designed to be beginner-friendly and offer vast learning resources online); they have short gestation periods that produce large numbers of offspring (it takes minutes to build out to a variety of platforms); and they boast a fairly small and relatively uncomplicated genome (they’re composed of game objects, a physics simulator and visual effects). Products of game engines exhibit significant tractability. They are easily controlled, facilitating productive observation and analysis. They are rich assemblies able to perform as ideal model systems in the study of self and landscape, or what it means to live in a place.

Without forgetting Mattern’s cautioning that ‘the city is not a computer’, that we must find ways of studying the city that ‘do not compute’, we can see how the mirror of virtual worlds enables new avenues of research like nonlinear dynamics, sensory intelligence and mnemonic sensitivity. Employing game engines as new, multiple and diversified body-schemas allows – encourages, in fact – disparate voices, diverse phenomenologies and heretofore unimagined being-in-the-world to be tested, studied and known. The collaborative sandbox of a gaming heuristics leverages scientific knowledge’s greatest strength: its social character. It is with discourse, debate and consensus building that we move forward as a community of individuals (Latour, 1999). Virtual environments do not create laws to be referenced when thinking about cities and their making. But they do create reliable and systematic knowledge for new urban futures.

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Part III

Ecological cities: sustainability and resilience

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10 Modelling a critical resilience

Board games and the agonism of engagement

Janette Kim

[file name: “Kim_05”]

‘Your urgency is not my urgency’. East Oakland activist Marquita Price pushed back against Dutch Special Envoy Henk Ovink’s call for action. Price stood with our design team at a critique during the San Francisco Bay Resilient by Design Challenge. Ovink, a jury member in the challenge, had urged our team to focus on more-actionable solutions, saying ‘the urgency is far greater than any of you understand’. In a heated exchange, Price and her colleague Gregory Jackson warned that any rush towards action would default to ‘the same capitalistic mindset’ that has long arrested social justice in Oakland. Instead, Jackson explained, ‘we’re redesigning how we’re interacting with each other. Without these relationships, we can’t be resilient’ (Kim, 2018; Resilient, 2018).

The challenge asked nine international design teams to envision a region capable of withstanding sea level rise by absorbing storm surge, enriching habitat and channelling funding towards the most vulnerable. Yet for Price and Jackson, such improvements – no matter how adaptive or invigorating – would only accelerate gentrification trends already well underway. More urgent for Price and Jackson was the need for affordable housing and sustained opportunities for residents to generate wealth. In anticipation of such concerns, teams participating in the challenge responded by integrating landscape and hydrological interventions into measures like affordable housing, supports for social infrastructure and hubs for emerging industries. Yet far from reaching any resolution, these ventures exposed an underlying lack of consensus on which housing and industries and which mechanisms for power sharing mattered most. Questions proliferated. How can social equity advance in a neoliberal economy led by business interests and a defunded public sector? Who among governments, industry and communities has the right and responsibility to oversee climate adaptation? In the face of such dilemmas, the problem of urgency is that a rush towards action would risk smoothing over critical debates about power sharing, wealth distribution and access to resources. It would simply calcify power in the status quo by default.

Just as urgent as the need to reshape cities, then, is the need to design a better public process. Although deliberation need not precede action, it must carve out room for designers to probe more deeply into the stakes of climate resilience. In this chapter, I reflect on the design and development of two board games that

Figure 10.1 The *In It Together* game.

Source: Janette Kim/Urban Works Agency

serve as just such decision-making tools – one called *In It Together*, which I created in 2018 as a design team member in the Resilient by Design Challenge, and one called *Bartertown*, which I created in 2017 for a California state regulatory agency called the Bay Area Conservation and Development Commission. These projects were informed by conditions specific to Deep East Oakland and the San Francisco Bay, but they also open up questions common to all cities where social inequities are exacerbated by sea level rise. These projects leverage features found in all games – players, currency, resources, chance and the board – to model and test alternate relationships among stakeholders, urban economies, political power, risk and the space of the city.

Tools for a decision-making process that is emphatically empowered and inclusive must make ideological differences explicit and debate them frankly to build an understanding across divergent interests. The games I describe here invite diverse participants to role-play unfamiliar perspectives and disarm preconceived tensions. Better tools must also translate across incommensurate disciplinary contexts and values. They would create a productive friction among the calculus of urban economics, narratives of urban success and the rhetoric of social justice. Bridging such criteria thus links those who are most affected by climate change

to those with the most power to address it – not simply to canvas opinion but to reshape the way power is shared. Accordingly, *In It Together* and *Bartertown* have been used by city agencies, designers, community advocates and students to move between an open, public-facing dialogue on the one hand and the analytic methods underlying urban governance on the other.

These strategies – empathy through agonism and commensurability – create what philosopher Bruno Latour has called a ‘common construction site’ for political ecology (Latour & Porter, 2009). I have organised this chapter according to these strategies – following a critical look at the narratives underlying resilience theory in the first section – to reveal how the *In It Together* and *Bartertown* games exemplify such methods. Political ecology understands all issues in an entangled, complex world to be deeply contestable and addressed not by some impossible unification of disparate perspectives but rather by sparking a more probing debate. I aim to reveal a decision-making process that can engage an inclusive public according to political ecology and thus meaningfully interrogate systemic forces behind social justice and climate change.

A common construction site

What does it mean to design a public deliberation process in the context of a warming planet? The wicked – or inherently unsolvable – problem of climate change prevents conclusive action around any single, optimised best practice and instead requires a more provisional kind of consensus. The entangled nature of sea level rise – with habitat loss, energy grids, market trends and urban settlement patterns, for example – requires strategies for tackling growing mistrust across diverse ideological and disciplinary perspectives. In response, engagement in the name of resilience has responded by sounding the alarm for mutual hazards that reach across camps and by promoting flexibility in the face of uncertainty. And yet Oakland activists’ concern that resilience planning is a vehicle for gentrification calls into question its capacity to form far-reaching coalitions. At its core, resilience theory has tripped over its own contradictions – namely its embrace of scrappy opportunism and its complacency towards relentless loss. The design of a better public process, then, requires a more critical look at the theory’s underlying assumptions.

Resilience planning has championed strategies for absorbing the shocks such as those posed by climate change. Cities, the logic goes, must bounce back from possible disasters such as hurricanes, volatile markets, infrastructure crashes and political unrest. This approach rose to prominence among urban designers with the 2010 Rising Currents Museum of Modern Art exhibition and the 2013 Rebuild by Design competition, which channelled nearly US\$1 billion to rebuild areas hit by Hurricane Sandy. Such projects resonate with programmes at the World Bank and United Nations and at the Rockefeller Foundation’s 100 Resilient Cities. The 2017–2018 Challenge in San Francisco captured US\$4.6 million from the Rockefeller Foundation to plan proactively for climate change while seeking ‘transformational change toward true long-term prosperity’ (Brown-Stevens,

2019, p. 7). Although the termination of the 100 Resilient Cities project in 2019 might soon reveal a turn in the movement, resilience has proven its own capacity by mobilising capital and institutional power on an unprecedented scale and by restructuring governance and financial incentives. Resilience planning remains relevant and worthy of recuperation because it has captured the public's imagination with vivid narratives of risk and has generated optimism among city leaders, despite dire projections.

Custodians of resilience have been celebrated for their power of creativity. Entrepreneur Andrew Zoll, in his 2012 New York Times opinion piece, heralds resilience as a successor to the sustainability movement, celebrating the seeds for grassroots economic growth sown by innovative minds. Zoll lauds the nimble intelligence evidenced in workarounds to off-grid conditions in developing economies, such as the use of mobile phones to crowdsource information during a crisis (Zoll, 2012). In a less entrepreneurial context, sociologist Eric Klinenberg's work reveals the resilience of neighbourhoods linked by strong family connections, friendships and acquaintances made in lively public spaces (Klinenberg, 2012). A robust social infrastructure that thrives day-to-day has forged critical support networks during times of crisis, to distribute food and medicine and to check in on the neighbours. More broadly, political theorist David Chandler describes the emergence of a new kind of resilient subjectivity that thrives not because of one's 'inner resources and capacities as an autonomous individual' but because of one's 'ability to adapt or dynamically relate to its socioecological environment' through an 'interactive process of relational adaptation' (Chandler, 2014, p. 7). Through sensitivity to and an awareness of one's own entanglements, this resilient subject can maintain responsibility for the consequences of one's actions on others and, even more, model governance on the basis of critical engagement and participatory democracy rather than on the basis of the centralised determinism of the state or market.

Alongside the optimism of resilience sits a humbler, more repentant tone. Resilience theory has emerged as a subculture of our contemporary risk society – to adopt sociologist Ulrich Beck's characterisation of a society bound less by class status and more by the shared burdens of the by-products of modernisation. (Beck, 2013) Such a society lives in anticipation of oil spills, cascading blackouts and antibiotic resistance – hazards created not because the world hasn't yet been tamed but because human attempts to wield control have created blowbacks of their own. In the context of corporate management, urban planning, governance and education, then, a resilient response would foster, for example, elasticity enabled by redundant supply chains, shoreline porosity edged by living breakwaters, disaster response nurtured by friendships among neighbours and grit cultivated by a young student's ability to venture educated guesses. In contrast to the hubris of modernist schemes, resilience knowingly retreats from grand visions and operates instead from a more hesitant position. To ecologist C.S. Holling, ecosystem managers must abandon attempts to solve problems outright and instead build a 'capacity to devise systems that can absorb and accommodate future events in whatever unexpected form they might take'. This demands an expertise built not

on the ‘presumption of sufficient knowledge but [on] the recognition of our ignorance’ – a call that has extended from biology to the corporate, engineering and psychological realms of resilience (Holling, 1973, p. 21).

This tension between opportunity and strain is traceable to Holling’s formation of resilience theory in the 1970s. To Holling, ecosystem disturbances – and not the stability envisioned by equilibrium theory – were the norm. Ecosystems were in a ‘continually transient state’ marked by fluctuations in predator–prey cycles, climate swings, chemical pollutants and overeager hunting practices. A resilient system was one that could withstand such threats not through its constancy but through its persistent ability to absorb and, ultimately, take advantage of volatility. Paradoxically, to Holling, a system builds greater and greater capacity to avoid extinction precisely because it must suffer through extreme instability (Holling, 1973).

Indeed, resilient subjects are frequently portrayed as archetypal figures characterised by their exposure to exceptional hardship, such as the spruce budworm, for Holling, and first responders and foster children, for Zolli. Critics of resilience scoff at the acceptance of failure lurking behind such condescending if well-intentioned praise of these hardy figures. A series of posters found on telephone poles and bulletin boards during the 10th anniversary of Katrina, for example, quoted Tracie Washington of the Louisiana Justice Institute: ‘Stop calling me resilient. Because every time you say, “Oh, they’re resilient”, that means you can do something else to me. I am not resilient’ (Kang, 2018). Washington’s protest galvanised concerns that resilience fails to change deep-seated and systemic sources of trauma. Even Zolli acknowledges that, of his examples, ‘none roots out the underlying problems they address’ (Zolli, 2012). The burdens of inadequate foster care or a privatised electrical grid is merely displaced onto the shoulders of the most vulnerable.

In light of such complacency towards failure, the opportunism of the resilience movement strikes a particularly perverse tone. To science historian Orit Halpern, the Rising Currents exhibition displays an indecent glee by serving up narratives of growth and innovation. Resilience here is a form of speculation, not merely through accidental oversight or a pragmatic acceptance of the status quo but as a profiteering move designed to exploit misfortune. The financialisation of futures markets and extraction of resources and labour ‘accept the sacrifice of certain lives as necessary and justified for survival and even growth’ (Halpern, 2017). Especially galling are the lessons from New Orleans, whose leaders boasted that Katrina gave them a ‘clean sheet to start again’ with a ‘smaller, safer city’ (Klein, 2007, p. 4). As journalist Naomi Klein has shown, the demolition of the city’s public housing and public schools – even including ones untouched by floodwaters – was launched straight from the playbook of Milton Friedman and free trade think tanks. Disaster capitalism seizes on a public weakened by crisis to strip the public sector and liberate markets for private interest.

Resilience has a plethora of boosters and a growing number of critics. It is at turns inventive, engaged, humble, complacent, clichéd and exploitative. Its humility might offer a correction against hubristic moves, but applied uniformly, it is complicit with the abdication of responsibility. Unwavering faith in an individual’s

capacity to learn and adapt presumes that risk should be personalised. Still, the claim that resilience is always exploitative discredits the power of self-organisation and networks of care – sites of empowerment critical to challenging existing power paradigms. Still further, where grassroots action risks reverting to self-interested factionalism, it's important to remember that resilient theory's pragmatic tone has forged some consensus amid dwindling trust in government and expertise.

A more nuanced version of resilience – and its public process – would recognise that humility, inventiveness and participation call forth unique burdens and privileges for each of us. Risk is not monolithic, nor are its subjects, sites or strategies. As Halpern has written, it is the 'evacuation of differences, in both temporality and societal structure, that is most concerning' about resilience (Halpern, 2017). While humility might be just the salve for the excessive use of power, it's overabundant among those subjected to economic exploitation and systemic racism. For resilience planning to be truly empowered, it needs to take responsibility for the distribution of these burdens while constructing pathways for adapting to inevitable and, indeed, collective risks.

The strategies for a decision-making process I described earlier strive towards such ends, towards a common construction site for public discourse. Empathy through agonism opens up a deeper regard for the differences embedded in common concerns. Commensurability brings competing value systems into meaningful dialogue to open up room for consensus around a newly defined commons. I hope to show how games empower decision-making around a more nuanced vision of resilience.

Empathy through agonism

The *In It Together* game stages role play among urban stakeholders to test how climate change magnifies or diffuses conflicts among them. The game enacts sea-level-rise scenarios to illustrate how diverse adaptation strategies, such as living levees and community land trusts, can impact competing interests.

In It Together evolved throughout phase two of the Resilient by Design Challenge as both a tool for facilitating collaboration and a product of the process. The game was useful even in our own team, the All Bay Collective, given its diverse disciplinary specialties and interests. The team included urbanists, engineers, biologists, landscape architects and urban economists at AECOM; architects and landscape architects at Conger Moss Guillard Landscape Architecture (CMG), California College of the Arts (where I teach and codirect the Urban Works Agency), David Baker Architects, UC Berkeley College of Environmental Design and modem; community advocates at Skeo Solutions; housing policy experts at the Turner Center for Housing Innovation; and climate engineers at Silvestrum Climate Associates. I also taught a seminar at California College of the Arts in which students created and tested initial game ideas and then fabricated a final version of the game. During the research phase of the challenge, our team studied how the combined threats of sea level rise and groundwater flooding would compound social inequality in the city. For design and outreach in phase two, we requested the chance to work around the San Leandro Bay – which links

Deep East Oakland neighbourhoods, Alameda Island, the soon-to-be-vacant Oakland–Alameda County Coliseum and the Oakland Airport – with its particularly rich entanglement among such pressures. Like many cities in the United States, Oakland has struggled to overcome the loss of industrial jobs and sustained disinvestment in public infrastructure. This has compounded with the history of redlining east of the Coliseum site, the demolition of public housing and predatory lending practices that have systematically excluded people of colour in Deep East Oakland from opportunities for financial stability and wealth creation. Today, warehouses lie in wait for development expected after sports teams leave the Coliseum, while the region’s housing crisis has raised median rents in Oakland by 30% in two years (Norman, 2019; Richards, 2019; Self, 2005). Navigating such a complex field especially required the insight and decision-making power of partners deeply connected to these forces.

Initially, forging such partnerships proved difficult because of community organisations’ reservations about the challenge. Although the organisers had worked with local leaders to identify sites of interest and were offering to sponsor nonprofit work with the design teams, they were also criticised for compressing this delicate public process into a four-month period and for assigning teams to sites without consulting community representatives. In protest, a few community-based organisations boycotted another site in the challenge. Despite similar concerns, Oakland Climate Action Coalition, Merritt College Brower Delums Institute for Sustainable Policy Studies, East Oakland Collective, Repaired

Figure 10.2 Stakeholder cards completed by project working group members from the design teams, community-based organisations and government agencies.

Source: Janette Kim/Urban Works Agency with the All Bay Collective

[file name: “Kim_02”]

The game design process began at the first of four working group gatherings, at which I asked stakeholders to describe their priorities on blank ‘player identity’ cards. Some expressed hope for affordable housing and job training, reflecting wealth-creation initiatives well underway, such as Repaired Nations’ support for cooperative housing ownership, the Oakland Climate Action Coalition’s community-run energy programme and the *Resilient Oakland Playbook*, issued by the city with support from the Rockefeller Foundation’s 100 Resilient Cities programme. Other shared interests centred on ecosystem vitality and human health, resonating with shoreline protection and recreation efforts led by East Bay Parks, the San Leandro Creek revitalisation led by the Dellums Institute and permaculture gardens run by the Ohlone-led Segorea Te Land Trust and Planting Justice. Still other participants expressed more isolated interests. The island city of Alameda shared their struggles with coordinating with neighbouring municipalities, even though they have an acute risk of flooding. Utility managers described the difficulty of finding long-term funding for infrastructural planning. For still others, the goals were simple: keep infrastructure operational.

On the basis of this feedback and initial input from my students, the game took shape as a contest among East Oakland Residents, the City of Oakland, the City of Alameda, the Airport, Utilities and Wildlife. I chose these characters to reflect the most distinct motives in the working group. And yet it was also evident that some perspectives weren’t being aired in this forum. Only in a private meeting

Figure 10.4 Draft adaptation pieces, showing flood control impacts in blue; parks, habitat creation and transit impacts in green; job-creation impacts in yellow; and other social justice impacts in red. Policies are applied with strings designating the boundary of an affected area.

Source: Janette Kim/Urban Works Agency

did we hear an arena representative express the need for the neighbourhood to be ‘cleaned up’ before development could gain speed – a perspective deeply dismissive of the neighbourhood’s social vitality and the dangers of gentrification. To reflect this reality, I added a Developer as the seventh player.

[file name: “Kim_03”]

I then returned to the next working group meeting with a series of adaptation pieces – many in consideration by our design team – that participants, as game players, could place on a map of San Leandro Bay. Pieces included a living levee, a groundwater pump, a freeway tunnel, bike paths, affordable housing, a tech hub for unicorn companies and a job incubator, among many others. Although the rules of the game had not yet been fleshed out, participants used the pieces to identify their priorities and debate their impact on the neighbourhood. Especially influential were criticisms from the East Oakland Collective and Dellums Institute members of the way tax funds were directed away from neighbourhoods in need. In response, we consulted with an urban economist on the team and brought new adaptation pieces to the third working group meeting, including a Public Benefits Zone piece that could channel income from future development to local immediate-term initiatives.

Such feedback shaped both the game and our eventual design proposal for the challenge. Our scheme, called the The Estuary Commons, defined adaptive landscapes that could cross over municipal and property boundaries to help build support for collective forms of governance and ownership, from participatory

Figure 10.5 Gameplay with architecture students Charles Zhu, Jose Rodriguez Trujillo, Digby Tianran Li, Kshitija Nagarkar, Georgina Gutierrez, Weiwei Zhongwei Wang, Dina Elattar, Emma Jingyi Luo, Ricardo Hernandez-Perez and Taa-mara Rath at California College of the Arts.

Source: Janette Kim/Urban Works Agency

budgeting to community land trusts. These moves aimed at supporting local wealth creation alongside large infrastructural projects, thus supporting adaptation without displacement (Bay Area, n.d.; Greenbaum, 2017).

[file name: “Kim_06”]

For the game, debates could remain live and unresolved, even as our design team’s proposal took shape. I finalised the rules of the game after the first three working group meetings. I’ve since played it publicly just over 20 times with East Oakland activists and residents, planners at sustainability and resilience conferences, agency representatives and city leaders at challenge events, and students from middle school to graduate school levels. Design team members took notes to document gameplay during challenge events, and I recorded video or audio during others.

At the start of play, each player gets a card outlining their goals, which resonate with some players and conflict with others. The City of Oakland and the Developer, for example, both need to generate revenue by attracting new residents and big business, and the Oakland Resident aims to pass tenant protections and support local food supplies. In other ways, though, the Developer and Oakland Resident share a focus on short-term gains, while the Utilities, the Airport and the City of Oakland all hold long-term responsibility for protecting against floods. In still other ways, the Developer, the East Oakland Residents and Wildlife all want parks to boost land values, air quality and habitat – but are opposed by the Airport, which is concerned about bird strikes in its flight paths.

Players have a limited income of five coins per round to purchase adaptation pieces. They can negotiate with each other to pool their funds, though curiously, players frequently hold back initially before they know whom to trust. Whether they cooperate or not, there’s an incentive to trade, deflect or at least pay close attention to each other’s strategies, since any pieces placed on the board score goals for all other players. As seas rise, these dynamics often shift. Players roll a six-sided die that determines sea level rise – from 0 to 66 inches – and roughly reflects recent predictions by climatologists. If any of their structures flood, those responsible for flood protection must pay a penalty of three coins. This burden leads to less collaboration at times and more at other time. Once, the City of Alameda team ignored their promise to build bike paths to Oakland as they shifted focus towards flood control instead. Another time, the Airport and neighbouring City of Alameda saw how entangled their low-lying landscapes were and invested in living levees together.

Such unstable allegiances have also challenged preconceived differences. After a game night with the East Oakland Collective, Marquita Price reported to me that playing as the City of Alameda pushed her to rethink her impulse to dismiss the interests of Alameda residents because of their wealth. Marquita had first brazenly proposed to move residents out of the flood plain but sought other solutions after hearing an Alameda resident in the room exclaim that she didn’t want to lose her home. To Latour, this ability to suspended judgement – or relationism – allows a ‘displacement of point of view that is so indispensable to public life. How can one take new beings into account if one cannot radically change the position of

one's gaze?' (Latour & Porter, 2009, p. 138). Role play opens up stakeholder identities through creative play, not ideological posturing. Still, this ability to shift perspective hasn't proven easy for everyone, as evidenced by a game night held with members of our own design team. One participant described the night to me by saying all players applied 'the right approach' during the first round and engaged in role play only when they played the game a second time. It appears that empathy must be learned, even and especially by those with deep layers of technical expertise.

[file name: "Kim_04"]

A similarly fluid relationship between collaboration and competition is reflected in the game's three possible end-game scenarios. In a win-lose scenario, one player completes their goals before the others. In a lose-lose scenario, everything floods. And in a win-win scenario, all players win by scoring collective resilience points. These are tallied on an abacus in the corner of the board and show the impacts of all moves – regardless of who played them – on the city as a whole. The abacus is colour coded to match the adaptation pieces along four categories of impact: environment, economy, social justice and governance. For example, a 'managed retreat' piece racks up environment points, in green, because it would

Figure 10.6 Resilience Abacus in the final *In It Together* version, showing collective improvements on environment in green, economic capacity in yellow, social-racial equity in red and governance in orange.

Source: Janette Kim/Urban Works Agency

enable the shoreline to adapt but subtracts social justice points, in red, because it would displace residents. Another piece, called a living levee loop, can protect the whole bay from flooding at a reduced cost and help reach a collective win. This optimistic design feature was suggested by design team members to reflect our proposal for an interlinked shoreline landscape. But importantly, there are many ways to win. And, in fact, such coordination hasn't always proven to be inclusive. Once, in a near textbook demonstration of the tyranny of the majority, five of the players passed a policy forcing the others to pay a tax for the living levee loop. This ended badly for the majority when the East Oakland Residents teamed up with the Developer and won. Other sessions have revealed more enduring forms of cooperation. Once, all players pooled their coins together in the middle of the board and played a public benefit zone piece, along with a local solar farm. They won so much profit from the solar farm that they were able to protect the whole bay in one round, before sea level rise could even strike (Kim, 2020).

For Latour, such deliberation is made possible by the skill of scenarisation – the capacity to create a ‘scale model of the common world’ that ‘makes visible some consequences that no other method could reveal’ (Latour & Porter, 2009, p. 152). Such models represent possible scenarios with enough clarity that they ‘construct controversies and referee them’ by testing their outcomes. Because a win-win, win-lose or lose-lose outcome could occur at any time, players in *In It Together* can decide at any moment whether to pursue a collective or individual win, depending on ever-evolving successes, risks and social pressures. The open-endedness of end-game scenarios mimics equivalent dilemmas in cities today and enables each player to decide at any moment whether to play competitively or cooperatively.

Across such scenarios, what makes it possible to air public interests is the suspension of any easy resolution. Indeed, a rush towards a ‘win-win’ outcome would, as Chantal Mouffe has argued, merely domesticate hostility and repress ‘the ineradicable pluralism of value’ (Mouffe, 2000, p. 15). Instead, Mouffe’s theory of agonistic pluralism would ‘arrive at a consensus without exclusion’ and respects other voices as ‘legitimate opponents’.

Most importantly for our team, this game played out conflict in search of a more difficult form of empathy. As mentioned earlier, perhaps the stickiest points of contention for our working group were the question of where the power to generate wealth lies and the relationship between development and gentrification. Initial attempts to navigate these differences only magnified distrust, creating frictions that either pit adversaries against each other or left much unsaid. The question whether the utilities would be willing to support community-owned solar installations, for example, was deflected early on in the process, due to fears that such a move would compete with utility companies. Similarly, some argued that large-scale flood protection could be funded only by revenue-generating programmes like a transit mega-hub or a tech campus for unicorn companies, while others insisted on wealth-creation measures directly in the hands of the neighbourhood’s mostly Black and Latinx residents (Kim, 2020). These debates foregrounded key social justice issues in the face of climate change – debates that our

team members were often uncomfortable discussing for fear of offence or stalemate. Although full resolution remained elusive, the game kept these debates live and sparked exchanges that can build trust over time and thus empathy if not full consensus. *In It Together* thus airs conflict – newly disarmed but equally emphatic and now surprisingly fun.

Commensurability

What would it take to move towards consensus? Although climate adaptation is inherently unsolvable, we can still imagine an objective of closure, described in Latour's terminology as 'the progressive and painful passage from scattered propositions by humans and nonhumans to a coherent but provisional calculation about the optimum way of dividing up the common world' (Latour & Porter, 2009, p. 153). This eventual goal would be impossible without some means of translating across divergent interests and languages embroiled in climate resilience and thus depends on another key deliberative process that Latour terms 'commensuralism'. Latour attributes this skill to economists who can calculate exchanges among objects by revealing their 'ever-more-intricate attachments'. I also argue that board games can do the same by linking disjointed forces through play. Indeed, as Latour puts it, 'nothing could link black holes, rivers, transgenic soybeans, farmers, the climate, human embryos and humanised pigs in an ordered relation, in one single cosmogram. Thanks to economic calculation' – and other models of world – 'all these entities become at least commensurable' (Latour & Porter, 2009, p. 152).

Throughout the challenge, Latour's black holes, rivers and soybeans were manifest as the competing conditions of the economic, ecological and social. Schemes for community-generated wealth initially strained under the logic that they couldn't scale up or prove profitable, even though economic growth wasn't the goal for many. 'Soft' judgements such as ethical arguments, strategic thinking and experience struggled to hold their own against the 'hard' evidence of economic or even hydrological performance. The terminology and criteria of equity were incommensurate with the managerial and market logics of urban planning.

In It Together makes such logics commensurate by defining criteria that cut across contending value systems. Using the same collective resilience points abacus, one player can assert the value of environmental adaptation, while another can measure economic growth. Curiously, the exchange rate among these values is determined through play, negotiation and changing tides. In some cases, players swap favours, such as when one player helps another with their short-term goals in exchange for future support. In other cases, players join forces around mutual benefits that might not be immediately evident. When all players invested in community-owned solar farms, for example, the city was convinced to abandon their interest in private utility companies.

[file name: "Kim_07"]

In addition, commensurability has also unfolded outside of the game itself and through its links to other platforms of deliberation. Our team member Paul

The Community Resilience Investment Decision-Making Tool

Current

Proposed Individual Plans

Legend
Significantly Positive (+)
Positive (+)
Neutral
Negative (-)
Significantly Negative (-)

In It Together - The Estuary Commons

Multi-Stakeholder and Community Collaboration

- Project Moving Group integrating stakeholder science
- Estuary Resilience and Investment Planning
- Annual Strategic Planning
- "Right the Transfer" supports on it's Together plans and
- Estuary Resilience and Investment Planning Tool
- Periodic peer reviewed land project review

Connected and Protected Habitat

- Create and enhance riparian and restoration
- Annual Marsh Expansion and Restoration
- Annual Marsh Expansion and Restoration
- Total Costs

AI Quality and Greenhouse Gas Emissions

- Transitioning to AI Quality and Greenhouse Gas Emissions
- Annual Marsh Expansion and Restoration
- Annual Marsh Expansion and Restoration
- Total Costs

Water Quality

- Create and enhance riparian and restoration
- Annual Marsh Expansion and Restoration
- Annual Marsh Expansion and Restoration
- Total Costs

Parks, Open Space and Green Infrastructure

- Create and enhance riparian and restoration
- Annual Marsh Expansion and Restoration
- Annual Marsh Expansion and Restoration
- Total Costs

Flood Resilience

- Create and enhance riparian and restoration
- Annual Marsh Expansion and Restoration
- Annual Marsh Expansion and Restoration
- Total Costs

Economic Risk and Impact

- Create and enhance riparian and restoration
- Annual Marsh Expansion and Restoration
- Annual Marsh Expansion and Restoration
- Total Costs

Community Benefits

- Community Benefits District
- Community and Total
- Community and Total

Diverse Employment

- Multi-modal station with new retail regional corridors
- Sustainable employment needed to provide local jobs
- New team coordination-related employment
- Community and Total
- Community and Total

Diverse Housing

- Accessory housing units
- New housing in Total Costs, Collaborative development and
- Community and Total
- Community and Total

Mobility

- Create and enhance riparian and restoration
- Annual Marsh Expansion and Restoration
- Annual Marsh Expansion and Restoration
- Total Costs

Public Health

- Create and enhance riparian and restoration
- Annual Marsh Expansion and Restoration
- Annual Marsh Expansion and Restoration
- Total Costs

Figure 10.7 The Community Resilience Investment Decision Making Tool: a triple-bottom-line style calculator expanded to include a fourth 'bottom line', governance.

Source: AECOM with the All Bay Collective

Peninger, an urban economist at AECOM, designed an analytic tool that serves as a companion to the game by taking scenarios from the intuitive process of play and evaluating them quantitatively. This tool, currently available in a beta version, is a triple-bottom-line-style calculator called the Community Resilience Investment Decision Making Tool (Brown-Stevens, 2019). Triple-bottom-line analysis is an accounting method commonly used in business management and urban planning. It measures the benefits of any proposed project according to its impact on ecological health and social equity as well as the traditional bottom line: profit. We built on this and added a fourth category – governance – to reflect the importance of local decision-making power. The tool is a Microsoft Excel file into which users can input adaptation measures they'd like to test, such as 1 mile of living levees or five thousand housing units. The file then outputs a pie chart illustrating impacts on stakeholders' goals, colour coded to match the game (Kim, 2020).

Despite such progressive methods of commensuration, *In It Together* admittedly does still rely on money as a common denominator, especially since players can purchase adaptation pieces only with coins. The quadruple-bottom-line calculator also runs the risk of clinging onto neoliberal 'win-win' and 'multi-benefits' thinking that echoes the sustainability movement's promise of guilt-free economic growth. Indeed, the need to quantify all outcomes excluded or de-emphasised some important criteria that were difficult to quantify, such as the connectivity of habitat, the hurdle of regulatory burdens, diversity of employment types and income inequality. Still, our team extensively vetted the list of criteria with the working group and found resounding support. And perhaps most importantly, these tools imported stakeholder voices and debates directly into the sites and techniques by which decision-making takes hold. Indeed, one of the challenges of using board games for engagement is the tendency to see play as external to the more serious business of governance. To avoid this, our design team anchored the game to analytic methods often required by government agencies for urban planning proposals.

Still, more probing work is possible. I close this chapter by unpacking a few other approaches I've used to further challenge the currency of resilience. I am currently designing a new version of *In It Together* with an independent board game publisher (this time for a generic city) for mass distribution and sales. This new version has two kinds of currency – dollars and votes – and distributes unequal starting funds to the players. The Developer and the City receive the most money and thus have more power to purchase adaptation pieces. The Resident player has more votes and can influence policies or even convince other players to vote the City player out of office. In this way, the game recognises that power can stem from more-distributed kinds of organisation.

[file name: "Kim_08"]

While *In It Together* locates power in money and political influence, another game I created, called *Bartertown*, locates power in generosity, mobility and creativity – powers that resonate with the resilient subject's capacity for self-organisation and networks of care. This game was commissioned by the Bay Conservation and Development Commission as a tool for their Bay-wide outreach

Figure 10.8 Barbertown, tabletop version in play.

Source: Janette Kim/Urban Works Agency

Figure 10.9 Barbertown, floor version played at MIT School of Architecture and Planning.

Source: Janette Kim/Urban Works Agency

process. They wanted to communicate to interagency partners and community members that the risk of sea level rise isn't isolated to flooding but instead has cascading impacts across complex social networks.

[file name: "Kim_10"]

The game is called *Bartertown* because it imagines a world without money. Players trade favours and resources with each other and test how their social interactions and interdependencies change as seas rise. There are five players, all residents of *Bartertown* who must play Activity Tiles throughout a landscape that approximates the San Francisco Bay Area, rendered as an urban elevation wrapped around a common body of water. This scene holds rooms colour coded by their use as homes, stores, public spaces, parks and commercial spaces. Here players can play corresponding Activity Tiles to, say, visit grandma, work in a sriracha factory, tutor local kids and drink bubble tea. The first player to complete their Activity Tiles wins. Floods, which are determined by chance cards, can isolate players by stranding them on newly formed islands, for example, or connect them around a new zone protected by a new alliance among players. Players then decide how they want to use Infrastructure Tiles. They can choose whether to work competitively or cooperatively, using Infrastructure Tiles to build bridges across the bay or protect individual sites from flooding. Thus, even a small localised flood can change entire transit patterns, social habits and investment strategies.

In part, *Bartertown* demonstrates commensurability in the way it translates sociopolitical strategy to the space of the city. The game mimics disparities common in many North American cities. Some neighbourhoods have low flood risk but not a lot to do. Others are risk-prone but have many densely packed, diverse programmes. And still others are subject to extreme environmental justice burdens or focused on singular land use types, like work or retail. Player decisions to retreat, roll with the changes or salvage sites they hold dear are put into relief against the social geography of risk management.

Figure 10.10 *Bartertown*, floor version played at MIT School of Architecture and Planning.

Source: Janette Kim/Urban Works Agency

[file name: “Kim_09”]

To explore commensurability even further, I have more recently designed an updated, human-scale version of *Bartertown* that assigns each player a unique power, or currency. Although we commonly assume that power comes only with money or political influence, this game asks how alternate skills are also critical to the collective. In this version of the game, the five players are Developer, Designer, Nomad, Caregiver and Politician. The Developer has the power to seize buildings as private property and decide how much to charge other players for access to them. The Designer can change the boundaries of buildings, thus extending or breaking open the envelope of the Developer’s private property or bridging between buildings to gain access to flooded rooms. The Nomad gets a divorce at the beginning of the game and loses their home but also gains the ability to travel twice as fast and change the programme of a room by ‘squatting’ in it. The Caregiver can give rides to other players and offer their home to other players to sleep in. Lastly, the Politician has the power of wealth distribution and creation. They can conduct a tax hike, tax return or tech boom investment, by seizing infrastructure tiles from players or giving up their own to redistribute them as they see fit.

Importantly, in over 12 game events I’ve held so far, almost every player has won more than once, suggesting parity among such divergent powers. In one event, the Developer team became immensely powerful by taking control over all of the stores, which are scarce, on the board. The Developer thus managed to manipulate the Politician into giving them infrastructure tiles in exchange for access to the stores. In another event, the Architect team ‘sold out’ their skills to the Developer, agreeing to expand their property into a mega-zone that only the two of them could use. Grassroots strategies can win too. One time, the Caregiver won (by the biggest margin to date) by carrying other players everywhere they travelled and collaborating (or playing bonus tiles with adjacent players) along the way. And in the most cooperative play yet, all players joined together to create a commune up in the hills and shore up critical stores and public spaces in low-lying areas. Across the board, players have demonstrated an inventive spirit often attributed to resilient subjects, all without turning a blind eye to the inevitable possibility for exploitation and contestation. Even though players are incentivised to compete, I also secretly tally an inequality score, akin to the collective resilience points abacus in *In It Together*. At the end of each event, I reveal to the players whether their group created a more or less equitable society in comparison to other groups.

Ultimately, *Bartertown* exists not to promote the idea of a barter society but rather to recognise that even in our contemporary society, power can be sited outside of money, through networks of care as much as speculation. Without any official stock market or exchange rate between generosity and property, this game makes them commensurate by demonstrating how each player’s values and capacities depend on each other. Both *In It Together* and *Bartertown* play out scenarios by which back room deals, entrepreneurial conquest, social delights, dense urban cores and sheer survival are intricately tied to each other – but now in a way that links economic analysis with other languages and spaces. They bring these conditions into alignment to test how power can be shared differently.

Conclusion: wary resilience

A wary – but insistently productive – version of resilience would make room for the collectives Gregory Jackson and Marquita Price argued for. This version would take provisional action and maintain responsibility for their consequences, all without smoothing over differences. The skills to do this are not limited to Latour's scientists, politicians and economists but in fact are demanded of a public that includes all subjects connected by climate change. For urban resilience especially, the skills of relationism, scenarisation, closure and commensuralism must be understood across the space of the city and thus require ways of translating among the models used by scientists, economists, politicians and architects alike. This kind of resilience would understand that its subjects can range from the most entrepreneurial to the most institutionalised and from the speculative to the nurturing, all without assuming a fixed value or agency behind each. It would find humility where it's most elusive and embrace power where it is most in need.

Games provide just such a model and orchestrate surprising ways in which players, currency, resources, chance and the board influence one another. Ultimately, by defining what it means to win or lose, these games use play to unlock the seeming impasse between social justice and profit motives in places like Oakland. Although climate will always remain a wicked problem, an engagement process that finds empathy through agonism and commensurability across value systems can ultimately ask core structural questions behind climate adaptation. The plasticity and inventiveness demonstrated by all players of these games has served as evidence for a kind of resilience that can empower. Such exchanges open up avenues for new ideological affiliations and unconventional alliances to emerge.

Credits

In It Together was created by Janette Kim/Urban Works Agency and the All Bay Collective for the Resilient by Design Bay Area Challenge. The All Bay Collective team was composed of AECOM, CMG Landscape Architecture, UC Berkeley College of Environmental Design and the Urban Works Agency at California College of the Arts, in association with Silverstrum Climate Associates, Skeo, Moll de Monchaux and David Baker Architects. The Urban Works Agency team involved in design and curriculum in the challenge was composed of Janette Kim and Neeraj Bhatia with Liz Lessig, Cesar Lopez, Namhi Kwun and Carlos Serrano. Partnering community-based organisations consisted of East Oakland Collective, Oakland Climate Action Coalition, Scraper Bike Team, Merritt College Brower Dellums Institute for Sustainable Policy Studies, Planting Justice, HOPE Collaborative, East Oakland Building Health Communities and Repaired Nations. Marquita Price is the urban and regional planning officer for the advocacy group East Oakland Collective. Gregory Jackson is the founder of the Oakland-based nonprofit Repaired Nations. Partnering government organisations consisted of Oakland Planning, the City of Alameda, BART, the Port of Oakland, East Bay Regional Park District and EBMUD. California College of the Arts students

involved in the initial conceptualisation of the game and its final fabrication are Shahad Alamoudi, Marwan Barmasood, Georgia Came, Denisse Correa Guerra, Ally Foronda, Eric Fura, Francisco Garcia, Jessica Grinaker, Fathmath Isha, Lori Martinez, Jennifer Pandian and Sabrina Schrader. Special acknowledgements go to Claire Bonham-Carter, Kris May, Paul Peninger, Stephen Engblom, Marquita Price and Greg Jackson for their involvement in developing the game. For more information, see www.urbanworks.cca.edu/in-it-together.

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11 Cocreation and participation for designing sustainable playable cities

*Gabriele Ferri, Mattia Thibault and
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Introduction

Urban areas are one of the key sites of intervention for a sustainable future. Cities consume more than three-quarters of the world's energy resources while accounting for less than 2% of its surface (United Nations, 2019). At the same time, half of the global population currently lives in urban areas, and this number is expected to grow in the next years (World Bank, 2010). While we recognise that these numbers fail to take all factors into account given the difficulty of pinpointing the realities of urbanisation and its ecological impact (c.f. Brenner, 2015), we are confident in stating that cities will be a fundamental concern for designers, policymakers, activists and public officials for decades to come.

However, especially when dealing with issues like pollution and resource consumption, there is a gulf between what we know in the abstract and what a majority of urbanites are well disposed to do. Stricter environmental policies are considered necessary by experts but are sometimes opposed in practice by many city residents. As demonstrated by numerous popular movements such as the French yellow vests, there is a rift between what is deemed to be ecologically important and what is acceptable for a sizeable portion of the population. Of course, these are a set of problems whose solution is complex and requires careful policymaking. Nevertheless, here we tease out specifically the need to motivate and inform citizens about environmental issues – a strand of a bigger and manifold general strategy towards making cities more liveable and less polluting.

Games and play have been successfully adopted to persuade and raise awareness in a multitude of domains. In the last few decades, educators have leveraged games with learners of all ages and levels. Moreover, games have been used rhetorically in political discourses, as data collection devices in scientific research (Ponti et al., 2015) and in many more fields, such as health (Salen, 2007) and civic engagement (Glas et al., 2019). It stands to reason to examine them as promising tools to inform city residents about their environment and to motivate them to adopt better ecological behaviours.

There are, however, still many gaps in our design knowledge hindering the use of playfulness as a resource for cities. There are misconceptions about which forms and genres of play are more suitable, and they reflect on the types of

intrinsic and extrinsic motivations that are targeted by games for cities. To investigate them, here we will focus on two outputs from the European Union Horizon 2020 (EU H2020) project Mobility Urban Values (MUV). Rather than focus on infrastructure, MUV combines technology, gamification and codesign to promote sustainable and healthy mobility choices. Our chapter focuses on two artefacts created in this project. First, several communities across Europe have been involved in cocreating and testing the MUV app¹, a gamified mobile application to motivate people to adopt environmentally friendly modes of transportation. Second, Asphyxia² is a device that visualises air pollution with tangible, embodied and sensory-rich movements and was also produced in the MUV project. We undertake a comparative analysis of these two artefacts and their design rationale. They embody two radically different approaches to urban play, and by analysing them, we will present our critical standpoint on the current understanding of persuasive gamification. We postulate that gamification and playful interventions would be more effective if they were bottom up, critical, truly participatory and nondirective – that is, if the balance between the system of rules and the agency and choices of the players privileges not the former (as it is often the case) but rather the latter. In sum, we support an agenda for research and design that favours playfulness to basic gamification, and we offer our analyses as a critical contribution to (game) design for more-sustainable cities.

Sustainable cities between top-down and bottom-up initiatives

The concept of sustainability is manifold and often integrates ecological considerations with social and economic perspectives. In this overview, we will not attempt an exhaustive description of this concept. Instead, first we connect it with urban spaces; then we tease out two of its components (smartness and playfulness); and we observe how they can be articulated in top-down (e.g. institutional) or bottom-up (e.g. grassroots) initiatives.

As a paradigm, the sustainable city takes into consideration several challenges (such as climate change and resource depletion) to enable residents to live within planetary boundaries – that is, the safe space in which humanity can operate without altering irremediably the ecological balance (Rockström et al., 2009). For instance, Kate Raworth's famous doughnut visualisation points at the boundaries in which humanity should strive to live in, between a floor composed of social well-being factors (equity, inclusiveness, health, education, etc.) and a ceiling determined by planetary boundaries (CO₂ emissions, biosphere integrity, land-system change, etc.) (Raworth, 2017; Börjesson Rivera et al., 2020). Indeed, the path towards a more sustainable society must also consider the social and economic well-being of the human population. Several approaches towards designing and measuring urban sustainability have been developed over the years, while ambitious (and so far mostly unmet) goals such as those set by the Paris Agreement of December 2015 are increasingly addressing national and supranational policies (Phillis & Kouikoglou, 2017).

At the crossroads between sustainability and cities, the idea of automating and optimising some urban functions through the use of algorithms has spread significantly in the last decade. Since the early 2000s, the term ‘smart city’ has been broadly adopted as a popular label to identify and cluster technology-driven approaches to urban development and renewal. Bowerman et al. (2000) characterise smart cities through their ‘use of advanced, integrated materials, sensors, electronics, and networks which are interfaced with computerized systems comprised of databases, tracking, and decision-making algorithms’ (Bowerman et al., 2000, p. 1). Potentially, smart city technologies could address the issues of sustainability and efficiency in cities: continuous monitoring, geotracking and ubiquitous computing offer tools for engaging citizens, influencing their behaviour and measuring their impact on the city. In fact, sustainability is one of the main narratives that are used to promote ideas and specific projects of smart cities (see Halpern et al., 2013). These tools, however, remain underused: although smart cities are often imagined to be sustainable, the current practice seems to have important shortcomings. Yigitcanlar et al. (2018) underline how smart city policies are often technocentric and institutionally top down, failing to incorporate progressive and genuine agendas for over-reaching sustainability goals. Top-down approaches to sustainable smart cities have been criticised for their potential to ‘kill creativity’, by allowing corporate giants to monopolise smart sustainable city development, thanks to their economic strength (Höjer & Wangel, 2014, p. 12). Further, commentators and scholars have raised concerns regarding privacy, instrumentalist urban planning and technological lock-in (Greenfield, 2013; van Zoonen, 2016). If universal and consistent principles are needed to coordinate efforts towards urban sustainability, the decentralised nature should be used as a resource, a ‘city-wide swarm intelligence’ capable of influencing collective behaviour from the bottom up (Kenneally et al., 2014, p. 97).

Playability might offer a counterpoint to top-down smart technologies and an alternative path towards urban sustainability, as recently argued by Börjesson Rivera et al. (2020). Indeed, they argue that sustainable cities should be playable cities too (cf. Lange, 2015; Nijholt, 2017). If we go back to the definitions of sustainability, including social aspects, the positive effects of urban play come into focus: many of the characteristics of a playable city – such as space to play away from traffic – fully resonate with ecological sustainability (Börjesson Rivera et al., 2020, p. 88). Indeed, we align with Börjesson Rivera and colleagues, who claim that ‘playable cities and sustainable cities can and should be aligned in their opposition to the smart city as an efficient machine. We would not want to propagate visions of playable-but-unsustainable cities, nor do we want our cities to become sustainable-but-unplayable’ (2020, p. 96). The two artefacts that we will analyse in this chapter, the MUV app and Asphyxia, are both examples of bottom-up playful interventions, despite their radically different design rationales. They both address themes related to sustainability through different ways of ‘calling citizens to play’, and they do so while rejecting the logic of top-down gamification and its often-directive and solutionist approach (see Morozov, 2014). Instead, the artefacts explore alternative strategies for engaging citizens in sustainable behaviours. In what follows, we provide an analysis of their design characteristics.

Methodology

Our analytical methodology is threefold and is composed of a close reading of the artefacts, a designer interview that we use as a counterpoint to our interpretation and a critical reflection and generalisation where we tease out broader implications for further design. In what follows, we detail the main concepts that informed our analysis, the protocol we followed and finally the data we accessed in our study.

Analysing games and play: key concepts

As discussed earlier, recent research developments make the case for playable urban spaces to also be sustainable. For this reason, we analyse the MUV app and Asphyxia, two interventions that articulate bottom-up playfulness in different ways: the former by providing a complex system to support and encourage players in their daily mobility choices and the latter by confronting them with an eerie sculpture representing levels of air pollution in a playful way. However, the theoretical vocabulary for analysing games and play requires careful framing, because key terms are sometimes used contradictorily or have multiple definitions.

First, gamification is a trend that has been popular in public discourse for almost a decade. Its most common conceptualisation is the use of game design elements in nongame contexts to increase user engagement by making them more game-like (Deterding & Walz, 2015). The main assumption behind it is that intrinsic motivation (i.e. a feeling of autonomy, competence and relatedness enjoyed during a task; cf. Deci & Ryan, 2008) is more effective than extrinsic motivation (i.e. the use of unrelated rewards). Gamification, then, can be defined as the attempt to imitate or hijack the intrinsic motivation created by games for tasks, services or products that are not, per se, games.

This idea of gamification has been criticised, however, for focusing too much on rules (Fuchs et al., 2015), for being inherently top down (Thibault, 2019a) and for having an essentialist approach to game elements – in other words, for implicitly arguing that ‘gamefulness’ is an intrinsic property of specific objects or mechanics (Bonenfant & Genvo, 2014). In this chapter, therefore, we prefer to adopt conceptualisations that identify the core of gamification in the gameful quality of the experience of the user (Huotari & Hamari, 2017) or, better, in its playfulness. Thus, we define ‘gamification’ as the design strategies that aim, through the implementation of different techniques, at providing their users with affordances that elicit playful responses. In other words, gamification is not about imitating digital games but instead about allowing playful interpretations and interactions in contexts that are not traditionally playful. Playfulness, here, is defined as an interpretative attitude, a sort of suspension of disbelief that allows individuals to explore and reinvent the meaning of the objects around them, assigning them fictional meanings but without forgetting about their real ones (Lotman, 2011). Gamification in the urban environment, then, can be understood as the adoption of playful attitudes and behaviours in public spaces of the city that are not traditionally deputed to play (Thibault, 2019b).

Finally, for what pertains to the experience of interacting with the two artefacts, we turn to ludological categories (Aarseth, 2014; Järvinen, 2007). Ludology is a formal discipline that aims to describe the experience of play through finite sets of discrete descriptors, thus enabling us to isolate and evaluate playful elements and their relationships. In this context, Järvinen (2007) offers a framework that is flexible enough to be applied to artefacts that, just like the MUV app and Asphyxia, allude to playfulness while not being full-fledged games. We adopt these categories to highlight similarities and differences between the cases we analyse and other mainstream games.

Analysis protocol

We followed the same analytical procedure for both artefacts composing this study, the MUV app and the Asphyxia installation. As a first step, we identified and categorised salient features related to the audiovisual components of the artefacts and to their interactive qualities. Then, we conducted semi-structured interviews with the design teams of both artefacts. The interviews were transcribed and analysed by two authors separately. The themes that emerged from the interview were compared with those from the artefact analysis, highlighting convergences and divergences between the two sets. The comparison between our critical interpretation and the designers' own explanation does not pretend to identify a reading of the artefact that is more 'correct' or more reliable than the alternatives based on some sort of authorial authority. Instead, we aim to tease out the intentional and reflective process at play in the creation of the design and try to reconstruct the rationale behind precise design choices and strategies.

For our analyses, we considered primarily our first-hand experience interacting with the MUV app and the Asphyxia installation, complemented by additional background information on the MUV project. To compile our experiential analyses, we interacted at length with the two artefacts, documenting our experiences. Furthermore, we had access to the design teams, from whom we obtained documentation on their creative process (sketches, mood boards, mock-ups, schematics and early versions). As the last step in our analytical methodology, we adopted a more reflective and critical stance, and we outlined a series of implications for design from the artefacts and their respective contexts of use. We provide these as contributions for further design and research in the field of urban playfulness.

MUV

In this section, we focus on the mobility urban values (MUV) software³: a location-based mobile app that aims at gamifying the experience of commuting and encouraging sustainable mobility. It was developed by PUSH, a design lab for social innovation and urban sustainability, with input from several participative design actions across Europe. In Amsterdam in particular, the MUV project actively addressed the residents of Buitenveldert, paying particular attention to the engagement of senior people. Participants were tasked to use the app to map

out their daily movements, to check their environmental sustainability and to reflect on whether an incentive would have motivated them to choose a different mode of transportation. Four cocreation events in January and February of 2018 allowed MUV to collect these insights, and the app was tested with several community walks with the participating residents.

Analysis

As smartphones become more powerful and better connected, many activities previously limited to desktop computers have become accessible from the sidewalk: for browsing the Internet to look for recommendations, playing games or checking maps. The widespread genre of mobility apps focuses on providing information and services related to travel and commuting and includes mainstream services such as Google Maps and hyperlocal apps helping tourists to move around. The MUV app, however, diverges from other mobility apps in several key ways. First, its primary concern is to apply game design principles to the everyday activities of commuting and transportation. By doing so, the MUV app embraces the basic characteristics of gamification. Furthermore, it adopts a clear ethical stance in favour of sustainable mobility, and its stated objective is to motivate citizens to choose less environmentally detrimental means of transportation.

The MUV app opens on a homepage displaying the user's name and avatar, their placement in the citywide leaderboard, the points earned during the week, the icon of the city where the users are located and their 'rank' determined by training sessions. Next, there is a feed visualising the user's past trips, their achievements and a bulletin board with news and information from the app managers. Finally, the lower part of the screen contains a functions menu and a triangular play button. When the button is pressed, after prompting players to select a means of transportation (on foot, by bike or by public transportation), the app begins tracking their movements. At the end of a commute, the stop button interrupts the tracking and shows an overview of the trip. Afterwards, the MUV app suggests snapping a picture and offers the possibility to report issues such as architectural barriers, unsafe streets and inaccessible sidewalks.

Players participate in training sessions, simple missions like cycling on a weekend, and obtain virtual coins and ranks from newbie to star. Virtual coins and ranks are needed for unblocking more activities and functions of the app. The time spent moving, the distance travelled, the position on a map and the calories burned are all logged and used to assign points. According to their total score, players are ranked across three levels: by city, among friends and overall. Occasionally, challenges take place between cities: during those periods, the points of all players are pooled in a total score, and winners are awarded both digital trophies and real-world prizes, such as restaurant coupons or theatre tickets.

By applying Järvinen's ludological categories (2007) to the MUV app, the following observations emerge:

- 1 As a location-based game, the most important of the MUV app's *components* is the tracking of users' movement through the city. Specifically, its main

16:34 4G+ R 65%

← Cities standing

	TEAM	WON	LOST	POINTS
1	Palermo	7	0	378.615
2	Roma	5	2	306.272
3	Gent	5	2	218.043
4	Helsinki	4	3	191.277
5	Barcelona	3	4	194.190
6	Teresina	2	5	190.253
7	Amsterdam	2	5	111.849
8	Fundão	7	21.531	

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Figure 11.1 MUV app: the leaderboard of the city tournament.

Figure 11.2 MUV app: some of the missions to complete in the newbie training session.

function is to track and log it and to compare players' behaviours, providing in-game feedback.

- 2 The *environment* is delimited to the cities of the MUV consortium.
- 3 As for the *rulesets*, the MUV app mainly proceeds by setting goals: it offers different goals such as the city weekly challenges, and the goal ladders are set by the training sessions.
- 4 The main *game mechanic* is moving through the city to earn points. All the other actions are either optional and outside of the game (celebrating with pictures, reporting issues) or made by the app by elaborating on the data from the tracking.
- 5 The main *theme* of the app is based on the relationship with the language of sports. Although it is usual for gamification design to borrow many terms from sports, the MUV app explicitly attempts to turn commuting into a sport.

The category of *game mechanic* teases out the gamified nature of the MUV app: the main mechanic is an action (move throughout a city, possibly as part of a daily commute) that users would arguably perform regardless of the app, which aims to influence *how* that action is performed. As is often the case in gamification, significant effort has been put into creating the goal-setting and feedback mechanisms. Indeed, with respect to a list of recurring elements in gamified apps as listed in the meta-study by Hamari et al. (2014), the vast majority are present in the MUV app.

Follow-up interview

The MUV app was developed by PUSH, a design lab based in Palermo, Italy, in cooperation with stakeholders from the MUV project network. In what follows, we will explore the designers' rationale, as reconstructed through a follow-up interview.

At first glance, the MUV app does not seem to deviate significantly from the dominant format of gamification revolving around the inclusion of game elements in nongame contexts. Following our initial analysis, we reached out to PUSH to investigate what process and considerations brought the designers to adopt this type of perspective. The interview revealed that the experience of living and working in the city of Palermo, where the designers are based, had a role in this decision. In their context, the developers argue, it is difficult if not impossible to promote structural changes towards sustainable mobility practices or to raise significant funds towards similar projects. Instead of intervening on infrastructure, with all the political and administrative overhead, the design team argues for investing in changing the bad habits of Palermo's residents. This is the main rationale for which they focused on behaviour change techniques and ultimately decided to leverage gamification.

The initial concept was framed differently from the final product and focused exclusively on only extrinsic motivation. The guiding metaphor was a connection between steps and currency: after having accumulated enough, users could use them to purchase goods at partner stores. However, our interview reveals how

Table 11.1 Ludological analysis of the MUV app elements.

Points	Accumulated by moving in the city in a sustainable way
Leaderboards	Both compared with friends, in cities and worldwide
Achievements/Badges	Trophies awarded for the competitions between cities
Levels	Four levels (newbie, rookie, pro and star) according to training
Story/Theme	The sport theme
Clear goals	Generally simple and clear goals both in training and competitions
Feedback	Feedback includes continuously keeping track of your points, a feed that announces your trips and achievements
Rewards	Training tasks are rewarded with a currency, city challenges with trophies and real-life objects
Progress	Tracked through the training and the leaderboards
Challenge	City challenges and competition in leaderboards

subsequent iterations progressively reduced the emphasis on extrinsic motivation (e.g. the possibility to use ‘steps’ as a real-world currency), as cocreation workshops with local university students proposed to include games and game elements in the app. As extrinsic motivation was relegated in the background, a follow-up iteration recalibrated the MUV app design in terms of a more canonical gamification strategy. As user research confirmed that the game experience was a primary motivator for people to use MUV, the PUSH design team decided to root it in the metaphor of sport. In the words of Toti di Dio, managing director at PUSH, ‘we imagined urban transportation as a sport made up of different disciplines: walking, biking and using public transportation’.

Further cocreation and participatory design initiatives took place across Europe as part of the broader MUV project. Through our conversations with MUV project partners, we have information about the app’s being reappropriated in emergent ways. For instance, Waag | Technology & Society, the Dutch node of the MUV network, adopted the app as a support tool for organising community walks in neighbourhoods at the periphery of Amsterdam. The designers at PUSH report that following this and other similar experiences, they realised that urban gamification could do more than just create valorisations around mobility and iterated further towards games rather than simple gamified systems. They decided to make the experience more complex and to motivate users to use the app also outside their daily commute. The last iteration shows the designers’ attempt to frame the MUV app also as a game, in addition to being a tool for activism and raising awareness. This marked a second shift away from extrinsic motivations (still present in the app as prizes for the tournament function) and a refocusing on intrinsic ones. Ultimately, the objective turned into making the experience so engaging that users would be well disposed to walk just for earning points and progressing in the game.

Tying together the strands of our designer interview, we see coming into focus different elements supporting the argument that the standard, dominant format of gamification makes a rather reductive use of playfulness and that it often

functions only slightly better than extrinsic motivations (i.e. real-world prizes) do. The PUSH design team moved away from these soon in their iterative process, in an ongoing search for more bottom-up kinds of gamification, allowing players to reappropriate the artefacts and to (self-)direct their play.⁴

Critical perspective

At its core, gamification is a strategy to modify habits, and it operates by reorienting expectations in everyday life and adding a new, gameful layer to it: this is where a considerable part of its efficacy derives from. If we go back to the MUV app and consider the list of game elements implemented around urban mobility, it is easy to recognise it as an almost textbook example of gamification applied to a societal challenge. In this sense, it is not surprising in itself and follows a series of tried-and-true design principles, including the direct correlation between tasks (e.g. moving) and rewards (e.g. points), the social leaderboards comparing various players' performances and team events pitting city versus city. Indeed, the MUV app faithfully implements most of the game elements described by Hamari et al. (2014) – namely points, leaderboards, achievements/badges, levels, story/theme, clear goals, feedback, rewards, progress and challenges – without deviating from the canonical examples. This type of gamification projects does not necessarily modify how an activity (e.g. movement through a city) is experienced itself but creates a form of artificial value, expressed in points and rewarded with levels and trophies, which has meaning in the app and among its users.

As we mentioned earlier, this kind of gamification has often been criticised. However, it is interesting to consider the *evolution* of the MUV app, by carefully following what emerges from the interview. In the beginning, the concept was simply using extrinsic motivation to incentivise walking, directly transforming steps into currency (an idea that has some dystopian affinities with the 2011 episode of the *Black Mirror* series 'Fifteen Million Merits' directed by LynEuros). Only afterwards, having analysed the users' feedback and the output of various codesign workshops, the development team began realising that extrinsic motivation was not truly sustainable or effective in the long term. We find it particularly significant that the design team at PUSH reported that at the current stage of development, their aim is to transform the app into a full-fledged game, and we interpret this as an indirect acknowledgement of the limitations of classic gamification and an attempt at rethinking it in a more experiential and playful way. Indeed, since the last development milestone, the app underwent a shift towards intrinsic motivation. While the core idea of measuring and tracking urban mobility and create a system of feedback around this measurement is still the same, the attention has increasingly moved towards the experience of the users.

Asphyxia

Developed as a spinoff of the MUV project, Asphyxia is a device that makes numeric information (e.g. data pertaining to air quality) not only visible but also

physically ‘embodied’, as it translates sensor readings into kinetic patterns, movements and rhythms. In what follows, we analyse the Asphyxia installation, and then we complement our critical reading with a designer interview.

Analysis

Like a lamp, Asphyxia is a device composed of a vertical stem holding a flexible canopy made of smooth white partially folded fabric. The canopy is arranged in a geometric structure similar to an irregular kaleidocycle, a shape composed by numerous polyhedrons arranged in a spherical structure that can partially fold over itself and ‘flatten’. On the stem, hidden under the fabric, there is a LED strip that can light up the structure from the inside and smoothly change its brightness and hue. The canopy, the stem and some technical components (a microcontroller, a stepping motor, cabling, connectors and a power supply) are enclosed in transparent plexiglass housing. Asphyxia is, at the time of writing, in a functional prototype stage, and the device that we consider in this analysis has a height of approximately half a metre: however, future versions will scale up to be bigger, up to four metres tall.

Asphyxia is designed to integrate into a network of air-quality sensors and, as part of the MUV project, visualise data in a more tangible and almost embodied

Figure 11.3 The Asphyxia prototype in a clear plastic case.

Source: courtesy of Friederichs, Goris, Tsalidou, ten Voorde

way. To do so, the device is programmed to correlate numeric values (the proportion of pollutants in an air sample) with patterns of breathing movements and light. This kinetic installation acts by combining different components. The canopy expands and contracts (component: rhythm); it lights up (components: colour, intensity, dimming speed); and it produces a mechanical buzz as it moves (component: noise). The rhythmic breathing is made possible by eight movable ribs inside the canopy, similar to those in a common umbrella: a ring slides up or down the stem, causing the ribs to expand or contract the canopy's fabric. However, while an umbrella's ribs open fully to tense the fabric, Asphyxia's movements are more subtle and cyclical. Indeed, the canopy appears to inflate and deflate with a smooth, organic rhythm comparable to breathing lungs or to a jellyfish's swimming in the sea.

In describing the lighting components of Asphyxia, we need to consider three variables: the intensity of the light emitted by the LEDs (from no light to full luminosity), its colour and the speed with which the light changes. The light emitted from the device can be synchronous with its 'breathing' movements (e.g. the luminosity is at its peak when the canopy is fully extended and then diminishes as it deflates), or in other circumstances, it can work independently. Finally, the audible features (buzzing) of Asphyxia are a direct consequence of its mechanical structure. The stepping motor, the joints of the ribs and the canopy's fabric vibrate slightly as they move, producing a faint but perceivable rhythmic sound in sync with the device's other behaviours.

As we tie together all the strands of this initial description of the Asphyxia artefact, we propose three initial observations. First, the various kinetic and audiovisual components of the device are aesthetically rich: taken together, the rhythmic movement and the pulsating lights and sounds produce a multisensory experience. On the other hand, Asphyxia does not seem adequate at providing

ASPHYXIA ACRYLIC CASE

Figure 11.4 Asphyxia, functional diagrams.

precise and quantifiable information, as there are no numbers, scales, gauges or precise guidelines on how to interpret its colours and breathing patterns. We call this first design strategy absent instructions. Second, Asphyxia may be interpreted metaphorically, following constructions such as ‘the machine is breathing’ or ‘the sensors are like lungs’. This brings forward follow-up interpretations, of which ‘if the air quality is bad, lungs (both Asphyxia’s and the interpreter’s) struggle to breathe’ and ‘if the air quality is fine, lungs breathe easily’ are particularly significant. We may call this second design strategy metaphoric reading. Finally, and more generally, Asphyxia supports multiple interpretations. Does the canopy represent a pair of lungs? If so, whose? What do the various rhythms represent? Choking or maybe excitement? As it expressly rejects clarity and ease of use, Asphyxia aims at eliciting dialogue, discussion and reflection. We may call this final design strategy open interpretation.

Follow-up interview

We now turn to a follow-up interview conducted with the team responsible for the Asphyxia artefact, with which we aim to construct the designers’ rationale. In what follows, we transcribe a selection of quotes from J. Friederichs, A. Goris, S. Tsalidou and S. ten Voorde, the authors of Asphyxia, responsible for its ideation, prototyping and initial deployment. All the quotes presented in this paragraph were agreed on collectively by the design team.

In our own close reading, first, we teased out the lack of specific cues orienting users’ interactions with the device. Now, the interview further hints at the rationale behind this strategy. The designers mention that over the iterative process of ideating and shaping Asphyxia, further concepts were experimented with, including pufferfish inflating their bodies, blooming flowers, beating hearths, swarming bees and flying butterflies. The process was exploratory and aesthetically driven: ‘We liked how, for example, squids move[, and we asked ourselves,] “Can we make that?” and see how it would look’. This significantly underlines the aesthetic and kinetic qualities of these concepts, all emphasising concrete bodily movements that are easy for a viewer to grasp and conceptualise. In other words, we point at how the designers focused on movements rooted in tangible bodily experiences that are instinctively understandable (e.g. gasping for air, being out of breath), thus sidestepping the need for detailed instructions.

Second, we pointed at how Asphyxia can be read metaphorically. Indeed, the overall aesthetic concept has been inspired by living creatures since the beginning, but our interview reveals that the overall guiding metaphor has changed over time. As further iterations added more kinetic elements, including origami-like structures and the flexible canopies, the concepts moved away from whole animals towards slightly more abstract ones. As the designers themselves articulate, ‘we had the idea of the lungs of the city where a flower would grow’. Here we see two metaphors at play: first a pair of lungs to show air quality and a blooming flower for noise pollution. In the designers’ own words, ‘the lungs were very literal, [connecting] air pollution [and] struggle to breathe, but the flower was more . . .

Figures 11.5, 11.6, 11.7 Asphyxia, extracts from the design diary.

Source: courtesy Friederichs, Goris, Tsalidou, ten Voorde

Figures 11.5, 11.6, 11.7 (Continued).

Figures 11.5, 11.6, 11.7 (Continued).

abstract', in that it would close if the noise level exceeded a certain threshold. While the lung metaphor fits the context, the flower was problematic. The logical connection between one part (noise) and the other (a flower) is tenuous, and the proposed behaviour would have been somewhat arbitrary: in a model viewer's experience, which flowers bloom only in silence? Furthermore, the proposed conceptual blend of lungs and flowers might have evoked more horror-themed human-plant hybrids rather than a peaceful representation. This was solved in the following iteration: in our analysis, we hypothesised a design strategy centred on a metaphorical reading, and the designers' interview supports our hypothesis. Indeed, the two metaphors were simplified and condensed into one, with the canopy's movement and lights representing the two variables of air quality and sound.

Finally, we collected all the strands of our analysis in *Asphyxia*'s overarching characteristic of being open to interpretation. The device's form is not clear at first sight. On the one hand, there is a general tendency to connect at least two of the device's behaviours (buzzing and breathing) to functioning lungs. As the design team recalls, 'the motor makes some sounds and . . . sometimes it would just stop. I think it worked really nicely, because people [in the audience] went like "Aww! . . . it's trying so hard to breathe"'. On the other one, when the prototype was first publicly exhibited, the designers noted that a certain number of visitors were having trouble making up their minds. They recall that '[if you think about] lungs, you get it right away', but a general ambiguity remains 'in a nice way, [where] you have to kind of look at it for a while, to [wonder] "oh, what could this be?"' Indeed, *Asphyxia*'s foundational metaphor never solidifies a specific domain and remains open to multiple interpretations: it holds if one thinks of lungs but also if one thinks of jellyfish, pufferfish or other creatures reacting to an unpleasant stimulus. The key point is that it programmatically does not attempt to be an accurate representation: it does not provide a scale, calibration or a baseline to read if air quality is increasing or decreasing. On the contrary, it expressly taps into a range of embodied experiences to create an experience that is at the same time familiar (after all, we all breathe) and alien (what is this strange moving canopy?).

Critical perspective

Analysing *Asphyxia* is complex because it resists purely functional approaches and, instead, favours ambiguity and open interpretation. Following the seminal definitions offered by Gaver and Martin (2000) and Gaver et al. (2004), we call *Asphyxia* ludic because it expressly sidesteps task-oriented functionalities and eschews a solution-based approach. More broadly, we agree with Sengers et al. (2005) in their noting that ludic design 'promotes engagement in the exploration and production of meaning, providing for curiosity, exploration and reflection as key values'. Ludic design calls for subjective and idiosyncratic methodologies, for leaving room for users to reappropriate technologies and for prioritising aesthetic pleasure over performance (Gaver, 2009).

Indeed, *Asphyxia* is in line with Gaver's approach to ludicity. First, it is composed by an apparently incoherent assemblage of different parts that do not 'fit'

logically. The stem evokes the structure of a lamp; the moving canopy recalls a living being; and the buzzing sound is clearly mechanical. Furthermore, it is neither ergonomic nor 'usable', because it lacks clear instructions on how to read its behaviours and signals. Finally, it prioritises an aesthetically interesting appearance over an easy-to-use interface. If we read it through the heuristics that are applied to the design of everyday objects, Asphyxia should be a failure. Yet Asphyxia fosters surprise, a sense of wonder, the delight of finding something unexpected at one's own doorstep and engaging in playful interaction in public spaces. By not 'fitting' in specific semantic categories – Is this art? Is this a tool? Does it transmit information? – the artefact is inviting and intriguing. By evoking biological entities such as lungs or jellyfish and applying their traits to street furniture, Asphyxia plays with the magical feeling of seeing an inanimate object as suddenly having a life of its own. It resists easy interpretation and, by doing so, prompts the audience to look at it from a somewhat unusual/unfamiliar perspective.

In sum, Asphyxia is not a game and should not be analysed with game-related categories, but it is certainly ludic (Gaver et al., 2004). It does not elicit interest via game mechanics, extrinsic motivation, points or the possibility to win, but it does so by being expressly strange, somewhat out of place and difficult to frame. The competition that Asphyxia proposes is not pragmatic, because the device does not actively play against users, but rather, it is cognitive and interpretive, because it challenges its audience to frame it. It is exactly this interpretive challenge that makes Asphyxia ludic and motivating in the same way that riddles and puzzles can be and makes it much more creatively stimulating.

Which playfulness for sustainable cities?

As we reach a (temporary) conclusion of our research, we wrap up by synthesising our findings and implications for future work. At first sight, the two artefacts we analysed both seem to eschew the category of games. However, a more careful exam reveals that at their core they both initiate playful interactions, though in significantly different ways. The MUV app relies on gamification and intrinsic motivation. Asphyxia, on the other hand, is expressly hard to interpret, inviting a playful exploration of the meanings hidden in its movements. From this perspective, the two artefacts suggest a possible spectrum of playful activities related to bottom-up urban sustainability. After analysing them and considering their designers' processes, we notice a gradual shift away from the widespread use of extrinsic motivation that characterised gamification in past years. On one hand, we find it significant that the first instance of the MUV app was simply providing rewards in the form of prizes, and then – thanks to the input of its users – it was progressively recalibrated towards the creation of experiential value and intrinsic motivation. On the other hand, Asphyxia rejected extrinsic motivation from the beginning and appealed more to a sense of wonder and mystery to motivate users to engage with it. In both cases, we observe a centrifugal move away from extrinsic motivation (i.e. prizes) towards other forms of engagement.

Despite these similarities, the two artefacts are different in their affordances and social contexts. The MUV app's social functions are more effective when played in cities that were involved more directly and for longer in cocreating it. Similarly, younger users so far have a higher retention rate than do mature adults; for example, the senior people involved in workshops in Amsterdam stopped engaging with it afterwards, while the students of Palermo who followed the project since its beginning are still playing with MUV in significant numbers. The ability to reshape urban mobility through a game, instead of just reframing it, seems more achievable when the users reappropriate the game and have the designers follow them enthusiastically. In a different manner, Asphyxia is explicitly an artistic artefact, a sort of reactive public sculpture, designed to be at odds with its urban context – a design strategy that serves its rhetorical structure but that also makes it a possible target of vandalism and theft. To be meaningful, it must keep a delicate balance between visibility (being present enough in the public spaces to be noticed) and normalisation (being overexposed and losing the ability to attract attention). Asphyxia's deployment and maintenance, in sum, are probably the most problematic aspects to take into consideration.

Taking these points into account, there are three key implications that we tease out from our interpretation and that we offer to (game) designers for further investigation. First, based on our analyses, we recommend focusing on the residents of a city and their experiences rather than on external rewards. Second, we also see clear benefits in leaving open spaces for interpretation and reappropriation, rather than coercing players to 'do the right thing', which may come across as paternalistic and judgemental. And lastly, we argue for moving past the widespread understanding of gamification based on behavioural techniques and the simple transposition of game elements to everyday activities. We contribute this last point particularly in relation to designing playful and sustainable cities, where we envision play activities to emerge from a more balanced relationship between designers and players that takes also into account codesign activities.

Conclusions

Current trends in urban game studies suggest that in relation to cities, there is a link between playability and sustainability. There is, however, a gap in our knowledge pertaining to *which* types of games and play are more attuned to raising awareness of sustainable urban living. As a contribution towards filling that gap, we presented a comparative analysis of the MUV app and Asphyxia. While we acknowledge that our study is exploratory and discusses projects still in development, it points to a direction in urgent need of further exploration along three dimensions: different strategies of sustainability, different kinds of cities and different types of playful actions.

First, our case studies focused on two key aspects of urban ecological sustainability: transportation and air quality. However, there is a large number of other forms of sustainable actions that could and should be taken into consideration. Playable cities should address different forms of ecologically sustainable

behaviours (e.g. energy consumption, water circles, material/waste cycles and urban heat island effects; cf. Yannas, 2001; Rosales, 2011) but also other forms of sustainability, such as social and economic ones, that are necessary for long-term implementations (Gibson, 2010).

Second, it is necessary to renounce a Eurocentric approach to the urban areas and to take into account the complexity of human settlement around the world. Sociocultural conditions can change greatly the conceptual and material aspects of the cities, which will in turn influence both their needs and vulnerabilities in relation with sustainability (Dodman et al., 2012) and their receptions towards playful or gamified applications (Khaled, 2015). It is important, therefore, to expand this research beyond the cities taken into consideration in this study.

The third and last expansion should be made to include different ways of implementing actions for change based on ludicity. For example, full-fledged games have been developed in game-based learning contexts to educate people about green buildings (Juan & Chao, 2015) or to raise awareness of sustainability issues in public spaces (Lameras et al., 2013). At the same time, we could imagine also novel ways of using playfulness for promoting or supporting sustainability, such as the use of toys or the implementation of other playful modalities. The potential of ludicity to promote urban sustainability appears to be high and yet mostly unexplored. We hope that this research work contributes to reframe playable cities as *intrinsically* sustainable cities.

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Notes

- 1 The app is available at www.muvapp.eu/ and was developed by PUSH (www.wepush.org/), which we thank for their kind support of our research.
- 2 Asphyxia was created by Jolijn Friederichs, Amy Goris, Sofia Tsalidou and Sven ten Voorde, students of the master of science program in digital design at the Amsterdam University of Applied Sciences. We are thankful for their help in documenting their creative process.
- 3 For clarity, in the rest of this chapter we will use 'MUV app' to refer to the software and 'MUV project' to refer to the research initiative
- 4 In the interview with PUSH emerged also their intention to use the app to collect data generated by citizens as players and use it as a resource for mobility managers, to make

better policies. Because this feature did not emerge from the app nor from its use and because it made use of play only tangentially, we decided not to focus on this particular aspect.

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12 Designing the Whole Earth as a magic circle

Marcus Owens

Like other chapters in this section, this chapter examines how games are a crucial part of participatory engagement and environmental modelling in the sustainable or ecological city. This chapter aims to further unpack the relationship between these two functions of ecological games, presenting a genealogy that shows how games came to be a mechanism for understanding and experiencing nature and the natural with the acceleration of planetary-scale processes of urbanisation over the course of the 20th century. In doing so, this chapter shows how games illustrate tendencies towards depoliticisation that characterise urban sustainability initiatives at the so-called end of history. In particular, it focuses on Buckminster Fuller's World Game and its influence on games proposed by Stewart Brand; Fuller and Brand were both known for promoting design, especially game design, as a response to the apparent ecological crisis emerging at the end of the 1960s. Both were also avid promoters of the aesthetic power of digital media and the view of Earth from space as part of this power, which this chapter uses to situate the game in a longer history of the genre of landscape.

The linking of planetary ecology, game design and digital media in Fuller and Brand's work illustrates the reconfiguration of ideas of nature and the natural in contemporary processes of urbanisation, showing how the videogame emerged as a symbolic aesthetic form of the global digital age (Sassen, 1991). Historians of science and technology have described how planetary-scale surveillance infrastructures, weapons systems and human-machine integration through user interfaces created a 'closed world' from simulations and predictive modelling (Edwards, 1997), while play and games took on increasingly significant cultural roles (Lee, 2013; Lütticken, 2010). This chapter focuses on how planetary-scale technologies and infrastructures produced a new kind of landscape view, with which Fuller and Brand designed a 'magic circle' that would envelope the whole Earth. It begins by examining the relationship between design, nature and the urban encompassed in the thesis of planetary urbanisation and how this emerges from the 'closed world' of post-war planetary systems management. Next, a survey of the historical relationship between games, geopolitics and the environment establishes the significance of Fuller's world game and the subsequent game designs developed by Brand for contemporary ideas of urbanism and sustainability.

Planetary urbanisation and the digital landscape

For urban theorists, including Henri Lefebvre and his prescient description of ‘total urbanisation’ in his 1970 *La Revolution Urbaine*, and Brenner and Schmidt’s more recent theory of ‘planetary urbanisation’, the extension and intensification of global infrastructures emerging in the second half of the 20th century prompted a reconsideration of the epistemological category of the city and nation-state as ‘containers’ of urbanisation, implicitly reconfiguring the relationship between the urban and nature (Brenner & Schmid, 2011). In recent decades, many have also called attention to apparatuses of planetary governance, and ways that the remote-sensing technologies of the Cold War augmented a ‘cartographic gaze’ to a planetary scale (Bakker & Ritts, 2018; Bratton, 2016; Gabrys, 2016; Pickles, 2004). Media theorists have described how these more recent ramifications of digital culture emerged from a longer genealogy of globalisation linking the spherical conception of the Earth and the visual form of linear perspective developed by Renaissance artists like Alberti and Durer (Friedberg, 2006; Gurevitch, 2014). By ‘objectifying’, nature in an automated fashion, the visual nominalism of linear perspective and cartographic projection forms a technological basis for the political concept of territory and the subject-object relations of the modern state (Elden, 2010) and the aesthetic concept of landscape, providing a romanticised idea of the organic, territorially bound nation (Cosgrove, 1998; Olwig & Olwig, 2002).

An early iconic example illustrating the salience of landscape representation and urban form is the famous urban landscape fresco *The Allegory of Good and Bad Government*, which presents the city-state of Siena as autonomous from the countryside. As a discrete object, it is potentially managed and designed according to virtuous principles in harmony with surrounding nature (Sadler, 2019). In contrast to the enclosed Renaissance city-state of Siena, this chapter shows how the concept of ‘planetary urbanisation’ responds to post-modern descriptions of ‘the end of nature’ (Cronon, 1996) and prior distinctions between the city and the countryside, where urbanisation metabolises nature as capital seeks a spatial fix through technology and labour. Empirical studies derived from these theories have subsequently shown how urban sustainability and resilience initiatives reflect a shift in the positioning of cities as solutions to environmental problems rather than as symptoms or causes of them (Wachsmuth & Angelo, 2018).

If planetary urbanisation corresponds to an end of the constitutive nonurban ‘outside’, in formal terms a planetary landscape distinguishes itself from previous forms of landscape representation in the collapse of the horizon with the view from space. Initially, a theoretical boundary between the Earth and the sky that structured the mathematical rendering of the landscape figure ground, as part of the cartographic gaze, the horizon also signified an undefined space beyond the territorial frontier. Emerging from the subject–object relations of linear perspective that underpinned the development from Renaissance humanism to industrial capitalism, the collapse of the horizon with the planetary view marks what media theorists describe as the transition to database as symbolic form (Manovich, 1999). This chapter explores how the collapse of the horizon as expressed in the

aesthetic form of the video game manifests in the conceptual dismantling of modernist notions of nature and the urban as well as history and futurity through predictive modelling and pattern identification. As historian of science Orit Halpern (2015) writes in her study of Norbert Wiener, after WWII, the age of organisation appeared to overtake the age of exploration. For Wiener, without an ‘unknown to discover, . . . we have come to assume that the world is always already fully recorded and archived; accessible at a moment’s notice through the logics of computational searches’.

The idea of planetary urbanisation, particularly the governance of the atmosphere, thus responds to the apparent decline of the Westphalian state system and ideas of territorial sovereignty. Wainwright and Mann (2018) recently explored this dynamic in their interpretation of climate change politics through the writings of Hobbes and Schmitt, observing how the global coordination of a response to climate change might necessarily entail a kind of ‘planetary sovereignty’. Ultimately, a collection of powers must determine the necessary measures of ‘what and who must be scarified in the interests of life on earth’. In this regard, Carl Schmitt’s notion of the *katechon* – a mechanism that prevents the end of the world, withholding chaos and deferring the possibility of an exit from the governmental paradigm of state power – describes the problem of political life under a regime of planetary measurement and surveillance. As this chapter explores, anticipatory calculation and planetary-scale computation work to enact a post-political consensus for environmental governance in the form of sustainability and resilience on an urban planet, taking form as games in place of politics (Swyngedouw, 2010; Wakefield and Braun, 2014).

At the height of the Cold War, Buckminster Fuller emerged as a pre-eminent ‘design scientist’, who saw data-driven operational strategies as sites of exploration and a new source of beauty, which Halpern describes as a visual culture of ‘communicative objectivity’. One of Fuller’s many followers, media theorist Gene Youngblood anticipated a ‘software of the earth’, which would render global citizens aware of their individual behaviour as they collectively observed the global videosphere (Youngblood, 2020). For Youngblood, the new generation would belong to a planetary new age, for whom nature was the solar system and ‘reality’ an ‘invisible environment of messages’. Building on Johan Huizinga’s theory of *homo ludens*, this chapter shows how the computational view of planetary landscape and the invisible environment of messages led Fuller and Brand to devise games that could envelope the Earth in a ‘magic circle’. The idea of the magic circle is manifested in the idea that popular exposure to images of the Earth from outer space would reveal a fundamentally fragile and interconnected ecosphere. Perhaps the first digital-native landscape representation, the view of Earth from space represented more-profuse ‘invisible messages’ of telecommunication accelerating with digital technology, one that would supersede the arbitrariness of political and cultural borders, ushering in a new era of planetary consciousness.

Brand and Fuller effectively turned to games to play the role of a Schmittian *katechon*; a means of withholding the chaos of the end of the world. As the following section discusses, war games have long played a crucial role in enacting

territorial sovereignty. Fuller and Brand's games are unique because of their explicit problematisation of territorial sovereignty in an apparatus of planetary environmental management, and the ways they foreshadow contemporary developments in digital culture and the global city. As the next section shows, games, especially videogames experienced through the user interface, communicated the dynamic and multi-scalar objectivity of the planetary environment as database. Both Brand and Fuller saw in technologically accelerated gaming the potential to recreate the liberal geo-technological ethos expressed in the myth of the seafaring Anglo-Saxon, the pioneer settler-colonist setting off beyond the horizon to innovate in the open seas or raw wilderness, where the innovator is burdened only by the constraints of raw nature and their own capabilities.¹

However, to more fully appreciate the significance of Fuller and Brand's games in relation to ideas of planetary environmental governance, it is necessary to briefly provide historical context for the ways that games informed ideas of territory and landscape.

Geopolitical games: sovereignty and sustainability

Games have long served to simulate, model and therefore displace conflict, either in place of or in preparation for war (Smith, 1945; Young, 1959). For example, the use of games in urban life as a mechanism of internal order is evident in the aforementioned case of the free city of Siena, where games animated the Piazza del Campo, the prototypical early modern public space and the Palio de Siena horse race, which was a sublimated conflict between the tribal *contrade* circumscribed within the city walls. Foucault's reading of Hobbes illuminates this relationship between games and geopolitics, positing sovereignty not as an act of bellicose domination but as a calculated avoidance of war. In this reading of sovereignty, the war of all against all is resolved through a game of representations, where each measures the danger that each represents to each and calculates the risk that each would take in resorting to force. Foucault thus connects this game of calculated rivalry between European states emerging with the Westphalian system to efforts towards the development of a competitive state, both in terms of military and economic prowess but also in terms of the *Wohlfahrt* (welfare, or wealth-tranquillity-happiness) that ensures an internal order, a forerunner to contemporary ideas of sustainability.

The development of norms and the transfer of biological metaphors to the domain of the social were crucial for the drive for internal order and of territorial integrity (Rabinow, 1995). The framing of an increasingly urbanised population in biological terms underpinned the development of urban spatial form of the *Volkspark*, a precursor to the Anglo-American public park typology, theorised by CCL Hirschfeld at the end of the 18th century. In the geopolitical context of the Napoleonic wars, outlaw nationalist Turnvater Jahn developed gymnastics in the liminal spaces outside Berlin's city walls as a means of 'nation building through body culture', reflecting this emerging biological conception of the nation (Giedion, 1948). This historical congruence between the public park and the biological

conception of the nation-state built through sports and recreation is further complemented by the development of Reiswitz's *Kriegsspiel*. In contrast to previous chess-like war games played in the abstract space of a static geometric plane, Reiswitz incorporated insights from the geophysical sciences developed by Humboldt, combining specific landscape morphologies with dynamic turns of play that reflected information processing time embedded in chain-of-command and reconnaissance capacities (Krüger, 1996).

Following the Franco-Prussian War, the logistical strategies of *Kriegsspiel* complemented biological imperatives derived from evolutionary theory, working to provide a basis for the formal development of Friedrich Ratzel's concept of *Geopolitik*. The idea of *Lebensraum*, roughly translated as *habitat*, envisioned a world of competition for scarce resources, illustrated in Germany's late entrance into the imperial scramble in the Berlin Conference of 1881. However, the contradiction in the *realpolitik* of blood and iron, or nationalism and industrialisation, that unified the German nation also intensified, demanding an increased focus on designing urban landscapes for play. Echoing early proscriptions for the *Volkspark* and Turnvater Jan's efforts at nation building through body culture, the health and vitality of the increasingly urbanised *Volk* diminished with the very industrialisation that made possible the stunning logistical triumphs that unified the nation. Observing British rugby clubs, urban reformers like Emil von Schenkendorff drew on this geopolitical imperative as grounds for organising the *Zentralausschuß zur Förderung der Jugend und Volksspiele*, or the German Central Games Committee, which formed an important precedent for the Playground Association of America, which included von Schenkendorff as an honorary member (Wassong, 2008).

Beyond the institutionalisation of urban games as part of the modern welfare state, a more profound historical conjuncture emerges from the geopolitical aftermath of the Franco-Prussian War, revealing the transversal relationship between urban games and the smart, creative and ecological city. In particular, the balloon launches from the besieged city of Paris – despite their logistical mastery of the territory through industrial expansion and calculated logistical orchestration – and the difficulty of the Prussian artillery downing the aircraft opened up the air and atmosphere as a domain of geopolitical competition. This new domain of geopolitical contestation ruptured the previous planetary division between land and sea famously described by Schmitt, leading to the race to develop a *Raumwaffe*, or space weapon, what became the nuclear bomb and the reality of mutually assured destruction from above (Hell, 2009).

The planetary landscape thus emerges from the US domination of the atmosphere, which is derived from Britain's dominance of the ocean, built on the convergence of machine logic (software) and machine calculation (hardware) (Chun, 2011). From Konrad Zuse's development of the first programmable computer to respond to wake turbulence in the Luftwaffe's fixed wing aircraft, to the application of Von Neumann's game theory and to the construction of the atomic bomb, a coupling of accelerations in computation and aerospace technologies both collapsed the horizon as the camera extended into space and compressed a distinction

between future and past, first in photomontages and then in predictive environmental modelling. In terms of visual culture, a genealogy of the planetary landscape as database descended from the German V2 rocket launched from Nevada's white sands in 1948, producing the first view of Earth from space, through the first view of the Earth from the moon, transmitted from the Lunar Orbiter 1 in August 1966 (Ceruzzi, 1989).

As histories of aerial photography and landscape ecology evidence, this new relationship to the planetary was not limited to the fact of nuclear winter but a total reconstitution of the idea of nature-as-environment (Dorrian & Pousin, 2013; Galison, 2001; Sloterdijk, 2009). In tandem with these new spaces of biophysiological exploration, a 'closed world' of global oversight emerged from a network of planetary information communications technologies made up of geographically disparate radar stations, aircrafts and telephone and radio links. As a forerunner to the user interface, the experience of this planetary-scale simulated world through the human-computer integration of the semiautomatic ground environment terminal reveals how video mediates the experience of the landscape as symbolic form. User interfaces of the semiautomatic ground environment missile defence system amplified and inserted the human body into electromechanical systems such as graphical user displays, core-memory devices and real-time control systems (Chun, 2011).

In addition to the question of media technology's facilitating interaction with complex systems, concepts of nature encompassed in the notion of planetary sustainability also entails the reconfiguration of modernist distinctions between future and past. This compression is latent in the photomontages required to assemble aerial landscapes and continues with the transfer of game theory – from predicting aircraft movement to the dynamics of nuclear explosions in agent-based models. The subsequent shift in nuclear policy from massive retaliation to mutually assured destruction enshrined the predictive algorithm as a Schmittian *katechon*: that which keeps the end of the world at bay (Masco, 2009). Paul Edwards described the formation of a planetary panopticon, a closed world emerging from the rapid computerisation of the military as one where every object is reduced to a code and every connection exposed a 'radically bounded scene of conflict, an inescapably self-referential space where every thought, word, and action is ultimately directed towards a central struggle' (Edwards, 1997). By 1969, US General Westmoreland famously depicted the digital space of this closed world in his vision of the electronic battlefield, where dispersed counterinsurgency forces 'located, tracked, and targeted almost instantaneously through the use of data links, computer assisted intelligence evaluation, and automated fire control' (Bousquet, 2018; Scott, 2016).

The idea of urban nature and contemporary models of urban sustainability are thus defined by a new temporal relationship, generated from the computational projection of data from the past into the future. Historians of science have shown that this computational management of perception, reason and intelligence constituted a new form of governmentality (Halpern, 2015; Light, 2005). Global scenario modelling, namely the 1968 Club of Rome's Limits to Growth Report, also revealed a crisis in the post-war Fordist economic order and the geopolitical

alignments of the Cold War. Namely, US foreign aid and the technology transfer of the green revolution replaced colonial administration, as world systems theorists such as Immanuel Wallerstein began to reconceptualise earlier notions of Cold War geopolitics as a network of dynamics between the core and the periphery of the global capitalist economy, crystallised in the 1973 the OPEC Oil Crisis. The rapid growth of urban agglomerations in the Global South and the ecological politics of second-wave urban environmentalism in the Global North thus constitute a new relationship between nature and the urban (Angelo, 2017).

The administration of Lefebvre's 'total urbanization' (Madden, 2012) unfolded through a transfer of operational strategies from the military which permeated urban planning, where the notion of serious games describes a set of practices designed to address challenges across the domains of education, social exclusion, vocational training and governmental and industrial planning (Abt, 1987). Fuller's world game was thus one of a number of technoscientific managerial approaches to the organisation of the world that coalesced into this new form of 'planetary housekeeping' (Katsikis, 2013). Historians of science have shown how strategies for world environmental governance began to unfold from the 1957–1958 geophysical year to the 1972 United Nations Programme on the Environment in Stockholm. The year 1972 proved significant in that it included the founding of the International Institute for Applied Systems Analysis in Vienna, a Cold War intellectual exchange focused on solutions to complex global problems. The launch of both NASA's Landsat program and the United Nations EARTH WATCH, both in 1972, provided a planetary landscape view for these new institutions of world management (Warde et al., 2018).

Buckminster Fuller's World Game

Many architectural historians have described how Fuller's work was a direct outgrowth of global scenario planning, just as Jay Forrester translated the modelling technologies of the 'closed world' of the semiautomatic ground environment missile defence system into the simulated world dynamics of the Club of Rome's Limits to Growth Report in 1968 (Picon, 2008; Wigley, 1997). A survey of Fuller's work shows how theoretical frameworks like general systems and game theory manifest in artefacts like his geodesic domes lining the Distant Early Warning Line in the arctic. This key infrastructure, which formed part of the semiautomatic ground environment system, then transferred to the civilian realm in the back to the land communes of the late 1960s. Through these systems and corresponding designed objects, Fuller's world game reconceived of the whole Earth as a magic circle and supplanted territory-based ideas of sovereignty with a global consciousness achieved through human–computer interaction. Fuller thus pursued a long-held goal of converting tools of weaponry, driven by the imperative of territorial sovereignty into outer space, into tools of livingry.

Fuller clearly saw the work of comprehensive anticipatory design science as warding off oblivion. Aviation and aerospace technologies played a particularly important role in creating a synergetic, round-the-world view. Fuller also

anticipated a changing temporal relationship with aerospace and information communication technologies as likely the first self-identified jetsetter, flying nearly constantly and experiencing multiple winters and summers as he criss-crossed the hemisphere. An important basis for Fuller's world game was thus the conjecture that 'people had become extraordinarily confident in the fundamental reliability of the computer and its electronically controlled processes', which was based on his observations of passengers on airplanes, at total peace flying blind through clouds guided by a computer. In particular, transgressing the threshold of the biosphere and 'the problem of how to keep a man in space' cast both the planet and the human into systematic analysis by the military-industrial complex (R. Buckminster Fuller, 1969).

Among the earliest immediate precedents for Fuller's world game was his Dymaxion Airocean World Map. Developed with Shoji Sadao, the map projected the surface of the Earth onto an icosahedron, which could then be unfolded to reveal the continents as a single island in the Earth's oceans while also preserving the scale and shape of the land masses relative to common geographic projections. Over the course of the 1950s, Fuller further developed designs for planetary visualisation with a geoscope, a geodesic polyhedron model of the planet illuminated by representations of massive data sets accumulated by planetary monitoring. The purpose of the geoscope was to reveal the subject's relation to the global flows of masses and raw materials, 'allowing the visitor to locate his house on the Earth through a complex system of IBM machines' (López-Pérez, 2014). Alongside the geoscope, other important components to the world game were the data themselves, compiled as the World Resources Inventory, which aimed to be a comprehensive database of geospatial information and statistics. For historians of architecture and urban design, the 1963 founding of the World Society of Ekistics by Fuller and C. A. Doxiadis, which supplanted the disbanded *Congres International d'Architecture Moderne*, heralded a new era of global design. Where the *Congres International d'Architecture Moderne* focused on formal principles of modernist planning in the context of national economic development, Fuller and Doxiadis's World Society of Ekistics leveraged global data sets to visualise transnational interrelationships and global systems as the departure point for a planetary-scale urban design (Katsikis, 2013).

Fuller first assembled these components as the world game for a 1964 proposal to the United States Information Agency for the aforementioned 1967 World's Fair in Montreal, housed in one of his geodesic domes, which became one of the iconic symbols of Expo '67. As an architectural installation, Fuller derived the world game from the NASA Control Center's model of computerised global data integration (Lichtenstein, 2016) with a 100-foot-diameter model of the Earth, unfolding as the Dymaxion Sky-Ocean World. Like the geoscope, the 'live world map' was animated by a computer-controlled array of miniature light bulbs representing various data sets concerning world conditions, events and resources. However, key innovations over the geoscope were the interactivity and the competition and collaboration between users. A responsive model would shift and transform in response to user inputs, as players aimed to develop scenarios in

which the world's resources were gamed to achieve 'synergetic' relationships that do more with less and make '100 percent of humanity a physical success on our Spaceship Earth'.

In addition to this interactive component, the world game differentiated itself from the geoscope in that not only was it designed as a tool that would be accessible to everyone, but the results of the iterative gaming were to be aggregated and then fed into a feedback loop of global media. Fuller saw world game results widely disseminated to the masses through a free press, 'live-televised the world over by a multi-Telestar relay system'. Comprehensive coordination of this information will soon bring about a '24-hour world-around viewpoint' that will operate 'transcendently to local seasons and weathers of rooted botanical life', emancipating humanity from the seven-day week as 'electromagnetic broadcasts would soon have the capability to directly sense how each and every human feels about each and every common human problem'. The world game could make visible the potential for a technological solution to politics, what Youngblood termed 'technoanarchy', as satellite harvested data and round-the-planet live TV revealed a 'synthaesthetic cinema', a world democracy based on the collective feeling about any proposed solution to any given problem. This would produce a groundswell of public vetting and acceptance for solutions to society's problems, forcing the political process to move in the direction of the problem-solving values of the world game and thus a 'concrete scientific alternative to politics'.

In the context of the 1967 World's Fair and rising dissent about US military operations in Southeast Asia, this great logistics game was also a world peace game aimed to address the problem of 'equalizing our wealth between the haves and have-nots'. Its motto was to 'foster responsible change and citizenship in a global society' and 'make the world work for 100% of humanity, in the shortest possible time, through spontaneous cooperation without ecological offense of the disadvantage of anyone' (Fuller, 2001). The idea of an interactive, global panopticon would serve as a tool of comprehensive design science, revealing synergetic efficiencies that would continue to improve quality of life for diminishing per capita amounts of total resources: 'melt up all the guns and other weapons and stock pile the metals for manufacturing more machinery to produce goods and services for more humans'.

Without international political boundaries and politicians to enforce them, food and goods would move freely across borders, eliminating territorial sovereignties and stopping the wasting of resources on weaponry and experimental warfare. Within Fuller's game, anyone employing ideological biases or resorting to guns would be disqualified. 'Obsolescence' was 'unanticipated by the political revolutionaries', and games were to be won by 'intelligent' and peaceful means, not in competition or struggle but in corporative exploration for a 'successful pollution-free life'. In this respect, the free flow of information across the globe was seen as the natural enemy of arbitrary local government, which Fuller believed to be directly responsible for the political turmoil of the late 1960s. With the world game, Fuller sought to create a new 'world man' through visualising and gamifying this information. The belief that technology and design could pre-empt

politics by providing an alternative to Malthusian paranoia shows how games became a Schmittian *katechon* that prevents nuclear winter, energy shortages and other apocalyptic planetary futures.²

Whole Earth games

As the previous section argued, Fuller believed the planetary perspective engendered by military technologies would inevitably migrate to the civilian sector, rendering politics and territorial sovereignty obsolete. For this reason, he was an active proponent of outer space exploration, which he saw as ‘an outlaw area’, a wilderness frontier space, where a state of nature demands technological innovation for survival. As Fuller states in a 1966 interview, ‘you can’t reform man, and you can’t improve his situation where he is. But when you’ve made things so good out there in the outlaw area that they can’t help being recognized, then gradually they get assimilated’ (Tomkins, 1966). While Fuller was specifically referring to his work with NASA on the problem of ‘keeping a man in space’, he also clearly celebrated the development of modern science and technology through the willingness of a small few to ‘trust their own intellect’ and ‘sail into the wind of tradition’, describing an oceanic narrative of Eurocentric world history similar to that found in Schmitt’s identification of the liberal technocratic tradition with the expansion of the British Empire.

For Brand, the outlaw areas, such as counterculture and the communalist open-land movement, provided an important venue for the development of a cybernation, a training ground for a coupling of archaisms and emerging post-Fordist dynamics (Scott, 2016). In this context, Brand’s Whole Earth Catalog mediated a dispersed, self-organised community that could serve as a microcosm or test bed for dealing with environmental crises, establishing models a new set of geopolitical relations determined by a consciousness of planetary limits on the biosphere. Rather than convincing people to change through the centralised communicative objectivity of the world game, Brand encouraged decentralisation and diversity. After a big change comes along, some people are found to have preadapted to it, so they flourish, and others quickly learn from these early adopters. This technoeological theory of preadaptation encourages diversity, independence, inventiveness and difficulty (i.e. learning). Sites of precarity (and innovation) lauded by Brand, including refugee camps, ghettos, squatter settlements which could serve as ‘laboratories for the definition, defence, and demonstration of an alternative life-style consonant with human dignity for the time in the not-too-distant future when leisure would be completely compulsory due to the inevitable take-over of repetitive labour by our “happy-slave”-cybernated industry’ (Scott, 2016).

Before establishing the Whole Earth Catalog, Brand rose to prominence as a mediator between the military-industrial complex and San Francisco’s emerging counterculture. This included working as a photographer for the Pentagon, participating in MKUltra LSD mind control studies at the Menlo Park Veterans Hospital and proselytising the drug as part of Ken Kesey’s Merry Pranksters. Brand’s 1966 Trips Festival is widely seen as an important milestone in multimedia event

production, which opened the door for him to produce Douglas Engelbart's 'mother of all demos' in 1968, which presented the graphical user interface and personal computer as tools for the general public. Brand was exposed to emerging videogame culture in the computer science labs of Stanford, and in 1972, he would go on to organise the first *Spacewar!* Tournament. However, Brand's experiments with games began as early as 1967, with the World War IV event held in collaboration with the War Resisters League at San Francisco State University, a precedent to the New Games first held in 1973. As Brand would later describe, rather than reinforcing the War Resister's views, which emphasise cooperation, he reports designing the event to 'bring conflict home', because too many were removed 'from the concept of direct confrontation'. He aimed to subvert the peaceniks, whom he saw as 'out of touch with their bodies in an unhealthy way', aiming to 'let them understand war by appreciating and experiencing the source of it within themselves' (Brand, 1974).

After the World War IV event and the Englebart Demo, Brand merged his interests in interactive media, global environmentalism and games as tools for personal growth in *Liferaft Earth*, held in October of 1969 (Welter, 2011). A forerunner to reality TV, the game took place in an inflatable structure, an experimental architectural technique in vogue among the Bay Area counterculture, and entailed voluntary communal fasting to 'make personal the matter of population control'. Alternatively dubbed 'the hunger show', a crucial addition a additional element was programming a media spectacle, bringing it into public sphere through visits from local news and the production of a documentary by filmmaker Robert Frank. Hyped up through Brand's countercultural media networks, the game began within a 4-foot-high inflatable wall that cordoned off *Liferaft Earth* from the surrounding suburban parking lot. Passing through the threshold, players signed in by recording their entry weight. Once inside, until they broke fast and 'died', players aimed to enact a radically participatory, self-organised system similar to spatial experiments undertaken at People's Park in Berkeley, at Wavy Gravy's Earth People's Park and in the open-land movements all at the same time.

The results of *Liferaft Earth* were featured in a 1970 supplement to the Whole Earth Catalog with the theme of the outlaw area. Also featured were reflections from Gene Youngblood's experience of playing Fuller's world game, as were other speculative planetary games. The world's human population remained a potent theme, *Liferaft Earth* presented alongside clippings on death rituals, voluntary sterilisation and birth control. Beyond this darker tone, the games emphasised using game theory to produce and optimise self-organising systems, providing a framework for the use of urban games to address ecological anxieties such as hunger, energy and climate change. One of the most developed examples is the Place Game or Mountain Fantasy, presented alongside the recap of *Liferaft Earth* in 1970 supplements to the Whole Earth Catalog, which shared a similar reality TV approach.

A multiplayer evolutionary logistical game, the Place Game was played with two opposing teams occupying an isolated and remote location intimately linked to the world by broadcast media. Evocative of the Cold War, the location was

separated into an east zone and a west zone by a permeable wall. Players participated in competitive battle, but adversaries was always provisional, because players switched sides as teams ran through various sociopolitical experiments, copying and appropriating their opponents under the management of the Place Company, which had 'ecological responsibility for the land and procedural responsibility for fairness of what goes on'. Spectators would form a quarter of the 'tetrahedonal dynamic (Team 1, Team 2, refs, and audience)', providing 'the energy of their attention as well as their financial energy' that Brand wished to harness to for the purposes of 'down-home world saving' (Brand, 1970).

By integrating competitors and the audience, the Place Game thus sought to demonstrate a fluid adversarial model, or a 'system that generates systems', an application of Gregory Bateson's dutoero-learning and neural network theories of learning, which Brand would have been aware of given his connections with state intelligence experiments on social psychology and neuropsychology in Silicon Valley. Brand's description of Mountain Fantasy also obliquely references the 1967 World War IV, which begin to exhibit the function of the ecological game in the spatial processes of urbanisation. As I have described in more detail elsewhere (Owens, n.d.), in 1972, Brand founded the Esalen Sports Center with human potential movement leader George Leonard, and in 1973, Brand helped organise the New Games Tournament with proceeds from the Whole Earth Catalog end of the world party. In short, the New Games aimed to bring urban populations to experience urban nature spaces and encourage creativity through the development of several ad hoc, self-organised games, as outlined in the Mountain Fantasy.

Beyond the games themselves, the first New Games Tournament in the Marin Headlands was part of a larger innovation in urban environmentalism that resulted in the formation of the Golden Gate National Recreation Area from redundant military installations under the guidance of self-organised citizen's initiatives and nonprofit organisations rather than the state (Rothman, 2004). The U.S. National Park Service later adopted the New Games for public engagement and team-building purposes, while the U.S. Department of Energy promoted them as a means of connecting urban populations to outdoor recreation opportunities in an energy-efficient manner. Although Brand withdrew from the New Games as it became institutionalised and proliferated around the globe, he continued his reflections on ecological games and the new spatial forms of digital culture in the idea of soft-war. He wrote,

our battles have famously outgrown our battlefield. The world's too fragile for another World War with current weapons and rules. . . . I suggest that it's time to turn the fortress inside out, send the conflict inside. . . . If arena-activity permeates the streets and countryside, then security may be found only in fortresses, islanded in a sea of fighting. If, however, arena activity is regionalized, then there would be islands of fighting in a sea of security. The safe portion of living could wander in a kind of park, with warfare contained *behind* fortress walls. . . . What I'm predicting, or promoting, is re-design of current war forms. Cold war showed us some advantages over hot war, and

some disadvantages (such as boredom, frustration, routine cheating, and a kind of paralysis). . . . let soft-war mean conflict which is regionalized (to prevent injury to the uninterested), refereed (to permit fairness and the certainty of a win-lose outcome), and cushioned (weaponry regulated for maximum contact and minimum permanent disability.) If you don't see much difference between soft-war and sports you're getting the point. . . . All I would require is that involvement in the arena would be voluntary, and so distinct from our present ghetto system (Brand, 1974).³

Brand's vision for a new kind of park articulated in the idea of soft-war presents a clear abstraction of dynamics unfolding in the urban landscape of the Bay Area in the 1970s, where harbour defences left redundant by the doctrine of mutually assured destruction served as a new kind of park space for the New Games. In addition to the New Games, Brand's defence the eviction of his Sausalito houseboat community evidences the ways the regenerative capacities of the Outlaw area serve as a new ecological model for urbanization. A wartime ship-building harbour, the Sausalito waterfront was largely abandoned by the middle of the 1960s, allowing for an influx of upwardly mobile hippies fleeing the crime and violence of Haight Street. By the 1970s, the increasingly well-to-do suburb sought to redevelop the waterfront and address sanitation issues stemming from the unlicensed informal community. In its defence, Brand held high the 'yeasty creativity' that enriched the whole region as a biological patchwork. In a 'cybernetic advanced subtle way', he argued, the disorder of the 'pirate' houseboat community informed and enriched the surrounding order of suburban Marin County (Brand, 1977). With weapons systems encircling the entire globe, space is created within cities for regenerative, simulated conflict. Within the unitary operating environment of the deregulated biosphere, tools like computers and geodesic domes allowed anyone to become a designer and global entrepreneur.

Conclusions

Fuller and Brand's games present a distinction within the longer genealogy of games and sustainability presented in this chapter, underscoring the significance of digital media and the construction of the planetary landscape view. Both Fuller and Brand, inspired by the planetary view, saw the potential of games and digital media to overcome the 'arbitrary' sovereignty of the territorial state. Whereas Turnvater Jan and von Reiswitz aimed to respectively use games and to strengthen the nation and the state, Fuller and Brand's games aimed to stabilize Pax Americana in the complex emerging world system of the late 1960s and 1970s. A pioneering vision of an interactive planetary landscape derived from NASA control centres, the World Game was an important instance of what Fuller called design science, the ultimate aim of which was to replace politics. With the World Game as inspiration, Brand saw interactive games and the global reach of digital media opening up opportunities for the 'social entrepreneur', grounding them in the space of the post-Fordist city. Game design and a planetary view could connect

the pieces and produce ‘win-win’ scenarios for every participating party. As Brand (1974) wrote,

you don’t change the game by winning it or losing it, or refereeing it, or observing it. You can change it by leaving it and going somewhere else and starting a new game from scratch. If it has appeal, it will gather its own energy. Fighting a system, however, merely strengthens that system, which accounts for a lot of bitter revolutionaries, including victorious ones.

Modelled on the encapsulated ecologies of the spaceship, on an enclosed planet expert government could no longer act upon the natural sphere as something separate from the human sphere. By encircling the whole earth within a magic circle, an ecological conception of urban space as a dynamic complex system emerged, one in which nature is produced by creative design thinking and innovation driven by distributed learning. For Brand, simulating the innovation of the Outlaw Area in the new urban spaces of post-industrial San Francisco revealed a dynamic interplay between ideas of urban nature and an understanding of planetary limits and resource scarcity characteristic of ‘the post-earth day generation’ and heralding the rise of the global digital city (Conan, 2000; Meyer, 2000). Like Jane Jacobs, prominent modernist critic of the era, Brand shunned the ‘old school environmentalism’ that sought to preserve scenic nature outside the cities, instead turning to ecological ideas of complexity as a way of understanding nature on a whole earth circumscribed by infrastructures of surveillance and computation.

Through distributed learning, ecological games from the World Game to the Mountain Fantasy thus aimed to serve a revelatory purpose, foreshadowing subsequent debates in landscape architecture concerning the ‘revelatory’ purpose of ecological design (Meyer, 2008; Mozingo, 1997). This notion of games as serving a revelatory (or creative) function brings this chapter back to both the eschatological considerations of Schmitt. Fuller and Brand both recognised these theological implications of their ecological games, the latter noting that in the planetary age of the computer, ‘as if the spirits of our ancestors weren’t trouble enough, now we’re haunted by the ghosts of our descendants’. The Earth’s physical finiteness, Brand wrote, needs ‘cybernetically alive systems which ensure both continuity and originality, where evolution may safely continue its engrossing play in the fields of the Lord’. Facing planetary apocalypse, anticipating that the ‘sky will fall’, requires ‘something that looks a lot like faith’ (Brand in Gabel, 1975). Further reflection on the mystical and spiritual undertones of design science suggests the capacities of ecological games to function as religious rituals within our contemporary relationship to urban nature.

The World Game, like the Club of Rome’s computer model of economic growth and natural resources, diagrammed out complex systems, projecting them backward in history – and into the future, eclipsing modernist notions of linear progress. In this respect, as planetary urban games liberated the city from the container of the nation-state and the restrictive standards of Fordist economic

development, the global city catalysed a ‘splintering’ processes of urbanization, propelling what urbanists have described as a ‘medieval modernity’ (Alsayyad & Roy, 2006). While Buckminster Fuller prophesied the arrival of ‘World Man’, the 21st century has witnessed a more general reversions towards national sovereignties and ethno-racial identity despite the spread of information communications technologies and the depoliticizing effects of urban sustainability initiatives. As this chapter showed, the view of the ‘whole Earth’ from space appeared to collapse on the horizon intensifying the compression of past and future latent in aerial photogrammetry. The temporal dimension of this new relationship to nature, akin to an end of history, suggests games are a crucial point through which to interrogate the dynamic logic of urban sustainability. With the whole Earth circumscribed as a magic circle, a Schmittian *katechon*, it would appear we have no choice but to continue to play.

Notes

- 1 The architectural historian Felicity Scott explored how the idea of the ‘outlaw area’ as a site of technological innovation translated to other spheres, such as the ‘back-to-the-land’ movements, and the cyberspace of *Spacewar!* and the first civilian social network – the WELL, or Whole Earth Llectric Link (Scott, 2016). Fuller’s notion of the ‘outlaw area’ served as a theme for an issue of the Whole Earth Catalog dedicated to games, which included Youngblood’s accounts of Fuller’s world game, and a key text analysed in this chapter.
- 2 Obliquely referring to the fallout of post-colonial movements coming to ahead in the early 1970s, Fuller writes about how the recognition of smaller and weaker nations, fostering a ‘false pride’ with the admissions to the United Nations, serves only to fortify the very concept of sovereignty. Architectural historian Felicity Scott has thus critiqued Fuller’s participation in the United Nations Habitat Conference of 1974 as a “Third World Game” in which the technological solutions of design science obscured political demands of newly decolonized nations.
- 3 Brand (1974).

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