

Spring 4-3-2017

Worldbuilding: a survey of games and architecture at play

Charlotte M. McKernan

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**Worldbuilding:
a survey of games and architecture at play**

by

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B.A., Franklin University Switzerland, 2013

THESIS

Submitted in Partial Fulfillment of the
Requirements for the Degree of

Master of Architecture

The University of New Mexico

Albuquerque, New Mexico

May, 2017

Dedication

To my cool pals and even cooler family. Thank you for your patience and support.

Acknowledgments

I would like to thank my thesis committee, Professor Nora Wendl, Professor Brian Goldstein, Professor Alex Webb, and Professor Tim Castillo, for their support and guidance throughout my studies at UNM.

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Abstract

Architecture often looks to the value of digital spaces for simulation and computation. This thesis argues that the architectural value of games comes not from their role as mimetic digital spaces, but instead from their ability to teach playful worldbuilding. Working with Ian Bogost's methodology of unit analysis, I unpack a number of examples of worldbuilding throughout architectural history. I begin specifically with the construction toy, then move on to explore playful architectural theories in general. Next, drawing from the fields of game design, literature, and philosophy, I unpack the value of worldbuilding itself as a method for generating meaningful spaces. I look broadly at the practices of spacemaking that ludic behaviors encourage. Finally, I look ahead to two of today's innovative architecture firms, Atelier Bow-Wow and Elemental, who are already leveraging playful worldbuilding in their design praxis. Ultimately, play and games are important to architecture not merely as complex simulation systems, but instead for fostering holistic, rich, and deeply personal environmental narratives.

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A note on images and links

When referring to digital software titles, I try to include screenshots, videos and links to the game titles that I am referencing wherever possible. Some of these links refer back to the Internet Archive's¹ collection of software programs. This software library, while extensive, is also an active, community-maintained collection; I cannot verify the integrity of the provided ISO images or other executables. Please exercise good judgement when downloading any software from the web.²

¹<https://archive.org/>

²As is always good practice: stay frosty!

The toy is the physical embodiment of the fiction: it is a device for fantasy, a point of beginning for narrative... To toy with something is to manipulate it, to try it out within sets of contexts none of which is determinative.

—Susan Stewart³

³*On Longing*, 56.

Chapter 1

Introduction

Practices at play

Architecture is a serious profession, as evidenced in both theory and praxis. In much the same way that a lawyer studies the law or a doctor studies medicine, the architect is a well-studied expert at making spaces. As such, it stands to reason that the profession often shies away from theories of games and play. With the exception of computer simulations, there has thus far been little overlap between theories of architecture and theories of game space. However, despite the necessarily systematic nature of the discipline, architecture also contains an equally (and perhaps, paradoxically) important non-serious aspect: the play element.

This thesis argues for the reincorporation of the play element into architectural discourse. In the first chapter, I present an abbreviated history of play in architecture from two perspectives. To begin, I highlight a particularly approachable example: specifically exploring the design and spread of construction toys and architecture from the 19th century to today.¹ This analysis includes Frank Lloyd Wright's history with Fröbel blocks (and his son's later invention of Lincoln Logs), "the Toy" of Ray and Charles Eames, and the *sloyd*—construction-play—of Lego blocks,² among other examples. Next, I present the term "play" as I am defining and interpreting it

¹Lauwaert, *The Place of Play*.

²Carlisle, *Encyclopedia of Play*; Thompson, "The Minecraft Generation."

for this analysis, and explore the history of play in the broader context of architecture culture. By tracing a lineage from the serious play of Walter Benjamin's *Passagen-Werk* to the counter-cultural play of the 1960's *Archigram* zines, I introduce various manifestations of the play element in architectural theory.

In chapter 2, I build from these seemingly disparate analyses to argue for a new strategy of playful design thinking, one which I have termed "**worldbuilding**." This approach emphasizes the value of non-serious play in serious project development processes. Working with Ian Bogost's "unit operations" strategy of comparative media analysis,³ I reference a series of explorations into meaningful examples of worldbuilding in both the unbuilt and built environments. These explorations pinpoint places where this strategy for design and project development is already occurring, and thus help to suss out the nature of this playful spatial practice.

To begin this search for acts of playful worldbuilding as design scheme, I look primarily to the unbuilt environment: namely, the world(s) of games. Gaming culture both embraces and exemplifies the *act* of playful spacemaking; throughout their history, games have recognized and incorporated myriad approaches to spatial design thinking. Following Huizinga's famous analysis of the "magic circle" of play, I explore the history of game development and criticism through the lens of architecture and planning. In particular, I reference to the act of designing and developing levels, worlds, and places of gameplay. Building on that foundation, I then summarize a variety of past approaches to analyzing and critiquing these game spaces, from the contentious ludology/narratology discourse to the less-direct unit operational analysis.

This thesis looks to targeted collections of small case studies, each pointing to an example of the unit operation of *worldbuilding* as a core component of gameplay. The unit analysis methodology sets up an interesting and dualistic approach to the critique of spatial practice in video games. The studies themselves are divided into two scopes of gameplay: "core gameplay" and "peripheral gameplay."⁴

³Bogost, *Unit Operations*; Bogost, "Units and Objects."

⁴As defined by Lauwaert, *The Place of Play*.

Exploration 1 looks to spatial design from *within*, i.e. games that feature worldbuilding as a core element of gameplay. I explore the collaborative worldbuilding practices of the tabletop RPG (specifically *Dungeons and Dragons*, first published by Gygax and Arneson 1974), and explore the role of choice and spacemaking in game narratives. Then, I look to the world of Mojang's *Minecraft* (2011), arguably the most wide-spread example of construction-play in our current games landscape.

Exploration 2 looks at the spatial design *of* games, i.e. worldbuilding from without, or cases where worldbuilding is a peripheral element of gameplay. I explore game development through the lens of a number of independent and small-studio games, and trace its roots back through game mod culture.⁵

Highlighting modern, indie titles that exemplify these two strategies of gameplay (though with an obvious focus on the spatial narratives, characteristics and ideas present in all), these explorations look to both the content and structure of game worlds. Each of these games assumes that the player has power to participate, manipulate, and even to overcome or rewrite the rules set forth by the game system. This message, carried through in various ways across each of these titles (and also from a macro-level in the world of videogaming as a whole) reinforces the core unit operation of playful worldbuilding: namely, the importance of spatial agency through play.

Referencing Bogost, I tie together the notion of play with possibilities for genuine creative development strategies. Bogost's methodology of unit operations is primarily analytical, but his later works, Bogost⁶ and Bogost⁷ look much more closely at the processes and practices associated with making games. This is further underscored

⁵The selection of case study games is by no means exhaustive (or even remotely comprehensive), and is primarily drawn from my personal experience as a videogame player. As such, it is heavily biased towards Western games and game developers. For a more comprehensive overview of the games industry, I point the reader to Mark JP Wolf's *Video Games Around the World*, which attempts to highlight and document key moments in game development across the globe.

⁶*Alien Phenomenology*.

⁷*Play Anything*.

by Bogost's explorations of Latour's actor-network theory⁸, Bourriaud's relational aesthetics⁹, and the speculative realists Harman, Grant, Meillassoux and Brassier.¹⁰ Their work serves as the foundation for a broad look to the role of play in our current architecture discourse, exploring the idea of agency and ludic action through the lens of architecture.

Throughout this thesis, I draw extensively from the work of numerous play and game scholars. First and foremost, I look to the play theorists Johan Huizinga¹¹ (who first called attention to the importance of play in culture, of the spatial nature of play, and of "the magic circle") and Roger Caillois¹² (who defined the various human needs fulfilled through the act of play: *agon*, *alea*, *ilinx*, and *mimesis*). I also reference the critiques of his contemporary, Mary Midgely.¹³ Additionally, I explore theories of narrative fiction; specifically looking to Janet Murray's book *Hamlet on the Holodeck*,¹⁴ which conducts a thorough exploration of spatial fiction in technology. By Murray's definition, digital narratives are procedural, participatory, spatial, and encyclopedic, all characteristics of game *spaces* that I will explore in depth in chapter 2. Finally, building from these foundational play theorists, I incorporate theories from the works of fictionalist aesthetic philosopher Kendal Walton¹⁵ and the subsequent work of fictionalist game theorist Chris Bateman.¹⁶

To conclude, I switch gears to explore our current "systems thinking" (top down) approaches to design in architecture (i.e. the cathedral model) and contrast them with the philosophical, object-oriented, bottom-up approach (i.e. the bazaar model, following Raymond¹⁷). This bridges the gap between strict formal and phenomenological approaches to architecture and spacemaking (both still heavily *designed*) and

⁸*Reassembling the Social.*

⁹Bourriaud, *Relational Aesthetics.*

¹⁰Bogost, *Alien Phenomenology.*

¹¹*Homo Ludens.*

¹²*Man, Play, and Games.*

¹³"The Game Game."

¹⁴*Hamlet on the Holodeck.*

¹⁵*Mimesis as Make-Believe; Marvelous Images.*

¹⁶*Imaginary Games.*

¹⁷"The Cathedral and the Bazaar."

shifts the dialogue towards a holistic strategy of process, experience, and result. My overall goal is to piece together these disparate mediations on spatial design practice. By approaching the process of worldbuilding through spaces of play (and, in the process, defending the value of play), I ultimately call for a return to play in architecture, regardless of implementation or form. With reference to the architectural explorations of Bernard Tschumi,¹⁸ through the analytic work of Atelier Bow-Wow¹⁹ and François Blonck, ²⁰ to the “incremental” architecture of the Pritzker Prize-winning Alejandro Aravena, I argue that the future of architecture is more in line with this playful open-source model, which emphasizes agency, sustainability, and the notion of generative worldbuilding as practice. In order to create compassionate, robust architectural spaces with character and longevity, we must look further than the code embedded in computational design—architecture must embrace the playful roots of design innovation.

This thesis presents the argument that *any* act of intentional worldbuilding has value, thus empowering amateur spacemakers and independent worldbuilders (both real and digital). Ultimately, I unpack what these constructed works and narrative experiences mean in the broad scheme of games, architecture and theories of spacemaking. Play is an expression of spatial agency, and thus an architecture that embraces the process of play embraces that which is most meaningful about architecture.

¹⁸Tschumi, *The Manhattan Transcripts*.

¹⁹Kaijima, Kuroda, and Tsukamoto, *Made in Tokyo*; Atelier Bow-Wow, Tokyo Institute of Technology Tsukamoto Architectural Laboratory, and Shinada, *Pet architecture: guide book*; Atelier Bow-Wow, *Echo of space/space of echo*.

²⁰Blonck, *Siteless*.

Chapter 2

Play in architecture

Architecture has long had ties to play, both in terms of playful theories and in playful processes of spatial design. Tracing a history from the small-scale construction toy to the expansive work of Bruno Taut, Walter Benjamin, Guy Debord, and others, this chapter argues that play is fundamental to the practice of architecture as it exists today. Then, after a brief overview of media technologies and their history in the practice and culture of architecture, I take the position that the next wave of architectural media is interactive, and thus the interactive world of the videogame is an untapped goldmine for architectural critique and theory.

An overview of construction toys

The world of architecture has had a longstanding link to an important, innocent form of play: the construction toy. Popularized in the late 19th century, construction toys have had a constant presence in the education of designers throughout the 20th century, continuing to this day.¹ These are toys and reconfigurable play sets that allow children to build imaginary worlds in miniature. Construction toys have a

¹Although inconsistent, the marketing of these toys often takes a problematic and unsurprisingly gendered tone. Children's toys have been historically linked to larger societal expectations: they are teaching tools. For boys, these toys educated about innovation, engineering, and work culture. Girls were taught the skills and tools of housewives. In this way, not only are toys a primary method through which children learn about the world, but these toys are also a political terrain. See Lauwaert, *The Place of Play*, 39–40.

history that traces back to the rise of “toy culture” in the mid 19th and early 20th centuries.²

As Lauwaert describes, the legacy of these construction toys can be categorized into generations based on technological advancements in fabrication. The first generation of construction toys are toys without interlocking pieces (Fröbel gifts, Anchor Blocks, etc.). The second, following the processes of standardization brought about by the Industrial Revolution, included new interlocking toys (Lincoln Logs, Meccano, “The Toy,” Lego, and others).³ The third generation construction set is digital, and includes software toys like Wright’s *SimCity* (1989) and *The Sims* (2000), as well as Mojang’s *Minecraft* (2011). Through each of these generations, describes Lauwaert, the toys trend from the abstract to the specific, and from the static to the procedural.

First generation: stacking blocks

Toys in the first generation of construction sets were born out of the shifting social landscape of the 19th century, specifically with regards to theories of leisure, consumerism, and childhood. In what some have retroactively dubbed the “age of the child,”⁴ 19th century narratives of child labor and exploitation gave rise (at least among the well-off) to greatly expanded discussions of childhood education. This led to a proliferation of toy stores and other consumer spaces targeted at children (and their parents). Toys gained popularity in tandem with discussions of proper child-rearing practices, as exemplified by the work of Friedrich Fröbel. Fröbel himself learned from earlier theories of education put forth by Jean-Jacques Rousseau, Mark-Antoine Laugier, and Johann Heinrich Pestalozzi (in addition to his own education in the natural sciences). His influential pedagogy transformed the landscape of childhood development.⁵

²Ibid.

³Although some construction toys, like the 1947 Castos building set (which encouraged children to create miniature of formwork, cast them in concrete, and paint the resulting shapes) don’t fit neatly into this taxonomy Vale and Vale, *Architecture on the Carpet*.

⁴Lauwaert, *The Place of Play* p 22-23.

⁵Brosterman and Togashi, *Inventing Kindergarten*; Dudek, “A Selective History.”

Fröbel is hailed as the inventor of kindergarten. In order to improve the process of childhood learning, his curriculum stressed engaging students through fun and play.⁶ Fröbel observed cognitive benefits in play, which he believed helped reinforce classroom lessons and improve learning outcomes.⁷ Beyond his broad pedagogical influence, he is perhaps best known for having developed a set of toys (*Fröbelgaben*, or “Fröbel gifts”). Intended to be distributed incrementally as a child came of age, these “gifts” primarily consisted of building blocks that both supported spatial education and acted as play props (see figure 2.1). These blocks were standard platonic shapes made of plain wood. As Lauwert describes, not only did these toys teach children about spatial practice and design, they also served to bring “the outside world into the house.”⁸ Frank Lloyd Wright, the quintessential architect of early 20th century American history, credits his early fascination with space to his experiences playing with these “gifts.”⁹ As George Hersey writes, “Froebel blocks also teach architecture itself... the blocks are much more architectural than most children’s blocks.”¹⁰ Owing to these purported values, the blocks’ use in some kindergarten curricula continues to this day.

Although Fröbel indeed established a robust pedagogical framework that highlights spatial learning as an essential element of childhood development, it should be noted that the material/fabrication-focused curriculum was not unique to Fröbel.¹¹ In Finland, Uno Cygnaeus’s theories of *sloyd* drew attention to the pedagogical value of making.¹² Later, mid-20th century Italian education theorist Maria Montessori also referenced the importance of materiality and simulated event play as central to her education curriculum.¹³ The Montessori Method calls for an attention to childhood interaction with tools and materials, including designs for her own set of

⁶Lauwaert, *The Place of Play* p 46-48; Carlisle, *Encyclopedia of Play*, “Froebel, Friedrich,” p. 246-7.

⁷Brosterman and Togashi, *Inventing Kindergarten*.

⁸Lauwaert, *The Place of Play*, 45.

⁹Rubin, “The Froebel-Wright Kindergarten Connection.”

¹⁰Hersey, “Geometry in the Twentieth Century,” 207.

¹¹Carlisle, *Encyclopedia of Play*, “Froebel, Friedrich”.

¹²Rasinen and Rissanen, *In the Spirit of Uno Cygnaeus*.

¹³Bogost, *Persuasive Games* loc 2799.



Figure 2.1: Contemporary version of Fröbel block set. Image by Kippelboy via Wikimedia Commons. CC BY-SA 3.0.

blocks. Her blocks could be used to build architectural forms, and the sets were named as such (e.g. “The Tower” and “the Broad Stair”).¹⁴

Building on the underlying form (if not the pedagogical principles) of Fröbel’s wooden blocks, German brothers Otto and Gustav Lilienthal devised new construction toy set in 1875.¹⁵ Their block pieces were fabricated out of a mixture of quartz, sand, and chalk suspended in a linseed varnish,¹⁶ a formula they later sold to the en-

¹⁴Dudek, “A Selective History”; Carlisle, *Encyclopedia of Play*, “Montessori”, p. 396-401; Fanning and Mir, “Teaching Tools.”

¹⁵Powerhouse Museum, “Anchor Construction Set”; Hardy, *Richter’s Anker (Anchor) Stone Building Sets*; Anker Steinbaukasten GmbH, “The Game Concept.”

¹⁶The fabrication mixture allowed for new, colored blocks—early sets featured shapes in

trepreneur Friedrich Richter. Marketed as *Anker-Steinbaukasten* (“Anchor Stone Building Blocks,” occasionally referred to as simply “Richter blocks”), this new building set made a more deliberate reference to the history of German architecture (see figure 2.2).

Anchor sets featured arches, turrets, pediments, and pillars. Despite their direct reference to historic Medieval architecture, Bauhaus founder Walter Gropius is said to have been fond of the blocks.¹⁷ Notably, some versions of the construction set itself came packaged not only with an instruction manual but also with a small booklet titled “The Practical Architects Guide,”¹⁸ which advised young players on building concepts. While Anchor blocks were particularly Germanic in style, other countries had their own vernacular architecture replicated in miniature. For example, a British playset of the time was Lott’s bricks, which drew inspiration from the Arts and Crafts style and architect Arnold Mitchell.¹⁹

Second generation: interlocking shapes

Per Lauwaert’s taxonomy, the second generation construction toy arrived with the advent of advanced fabrication techniques, which allowed for consistently mass produced interlocking toy pieces. By introducing stable joints between pieces, these sets allowed for a much greater flexibility in design—it freed the builder to expand beyond a strict adherence to horizontal and vertical design axes²⁰.

Continuing in the tradition of his father, John Lloyd Wright developed and released a quintessentially American interlocking construction toy set: *Lincoln Logs* (see figure

red, white and blue.

¹⁷In true entrepreneurial fashion, Richter is said to have enthusiastically sought out testimonials for his toy blocks, even going so far as to get recommendations from his key innovators of the late 19th century. Notably, he sought the testimonials of Thomas Edison and President Grover Cleveland. (, Powerhouse Museum, “Anchor Construction Set,” Vale and Vale, *Architecture on the Carpet*.)

¹⁸Puppenhausmuseum Basel, “Steinalt Und Hochmodern”; Schulz and Hardy, “Anker-Material”; Powerhouse Museum, “Anchor Construction Set.”

¹⁹Vale and Vale, *Architecture on the Carpet*, ch. 4.

²⁰Lauwaert, *The Place of Play*.

2.2). Not only are *Lincoln Logs* one of the earliest interlocking toys (first patented in 1920, US Patent No. US1351086.²¹), the design of the pieces makes a direct reference to both the work his famous father, American architect Frank Lloyd Wright, and to the log cabin construction of early American folk culture. John Wright worked with (and was subsequently fired by) his father during the development of the Imperial Hotel in Japan. The hotel building attempted to mitigate earthquake damage through the use of flexible, interlocking joints, a practice that likely inspired John Wright's toy design. Upon returning to the United States, he filed a patent and began distributing the toys.

Besides the architecture of Frank Lloyd Wright, the interlocking toy has (perhaps unsurprisingly) been linked to a number of other distinct phases in Modern architectural history, including the following:

- The 1920s gave rise to the American Bilt-E-Z toy²², its British copycat, Arkitex, and the later Kenner Girder and Panel sets all of which featured (in some form) curtain wall construction pieces that mimicked and miniaturized a new architectural typology: the American skyscraper.²³
- The Dutch toy Mobaco offered a variety of cardboard and wood pieces that slotted together, creating a flexible language of architectural framing reminiscent of the DeStijl style—specifically Gerrit Rietveld's 1924 open-plan Schröder house and J.J.P. Oud's 1925 Café De Unie.²⁴
- The British toys Wenebrik (which mimicked prefabricated metal home construction) and Bayko (with its exaggerated versions of suburban homes) both reinterpreted building strategies put in place in the post-WWII housing boom.²⁵

The British construction toy Meccano (an interlocking set patented by Frank Hornby²⁶) has also had a significant and notable impact across generations and

²¹Toy-cabin construction.

²²Vale and Vale, *Architecture on the Carpet*, p. 153

²³ibid., , p. 150-163

²⁴Ibid., ch. 7.

²⁵Ibid., ch. 5 and 8.

²⁶Toy or educational device.; Toy or working model.; Toy or working model.

disciplines. The toy, marketed to teach “engineering for boys,” features a rather complex series of parts (including, as Vale and Vale list, “strips, plates, girders, gears, sprocket chains, pulleys, motors—steam, clockwork, and electric”—and more, see figure 2.3²⁷), that allow for the player to undertake construction of both mechanism and structure. Both Norman Foster and Richard Rogers have cited Meccano as a source of inspiration for their architectural design work, as is apparent in the exposed structural systems of their later built projects (even if the reference is largely formal), specifically with regards to Rogers’ Centre Pompidou (1977) and the Lloyd’s Bank Building (1986).

As an interesting aside, Meccano’s kit-of-parts philosophy has also had a significant impact on other practitioners in disciplines beyond architecture and structural engineering. The winner of the 1996 Nobel prize for chemistry, Sir Harry Kroto, stated that his history with the building set helped him to conceptualize his chemical research.²⁸ The toy also had a direct link to the world of early computer simulation: the 1935 Meccano Differential Analyser No. 2 (J.B. Bratt, Cambridge University) was an early mechanical computer built out of Meccano and used for weapons calculations in WWII. The device, which remains on view in New Zealand at the Auckland Museum of Transport and Technology, was operated by adjusting the toy gears.²⁹

Later wartime toys similarly addressed real-world engineering concerns, as evidenced by the German Mechanicus and British Juneero construction systems of 1933 and 1939, respectively. These toys were essentially toolkits for taking found materials and fashioning them into Meccano-like construction sets. With regards to Juneero in particular, Vale and Vale write, “it demonstrates the effort needed to make things from scratch... it is a toy that imitates the architectural experience of make-do-and-mend.”³⁰ Other such engineering-focused toys include the Erector Set and the Tinkertoy, both of which helped to educate generations of children about ways of making

²⁷ *Architecture on the Carpet*, 39.

²⁸ *Ibid.*

²⁹ O’Neill, “Meccano ‘Dam Busters’ Computer”; Vale and Vale, *Architecture on the Carpet*.

³⁰ Vale and Vale, *Architecture on the Carpet*, 130.

(and breaking) space.³¹

It is hardly surprising that explosion of innovative and countercultural design in the 1950s and 60s gave rise to unique and creative new construction toys, in turn. One such set in particular, charmingly dubbed “The Toy,”³² was developed and released by design darlings Ray and Charles Eames in 1951. The set contained large (30 inch) sheets of brightly colored paper in various shapes, along with dowels and connectors, encouraging play through the design of abstract spaces. As stated in an advertisement, it was intended “for creating a light, bright expandable world large enough to play in and around.”³³ Later, the duo released a smaller version of the Toy (aptly named “The Little Toy”), which they described as a set to play *with* (as opposed to *in*). The office also developed other construction and architecture toy prototypes, including their Revell Toy House (an unreleased prototype),³⁴ in which the architectural language of their famous Case Study House is miniaturized. As architects and designers, the Eames’ crafted a practice built on play and experimentation, and toys of all shapes and sizes played a central role.

And finally, no discussion of interlocking construction toys would be complete without mention of Lego blocks, arguably the most well-known and enduring construction play object to this day.³⁵ Although the history of Lego interlocking brick technology is somewhat contested,³⁶ carpenter and craftsperson Ole Kirk Christiansen began developing the toy during the Great Depression in 1934. The name Lego is a portmanteau of the Danish phrase “*Leg Godt*” (“play well”), and Vale and Vale cite Christiansen’s deliberate attention to the *practice* of play as the ultimate reason for the toy’s enduring success.³⁷

³¹Carlisle, *Encyclopedia of Play*, “Erector Sets“ and “Tinkertoys”

³²Fabrizi, “‘The Toy’ of Charles & Ray Eames.”

³³Eames Office, LLC, “The Toy.”

³⁴Eames Office, LLC, “Revell Toy House.”

³⁵Carlisle, *Encyclopedia of Play*, “LEGOs”.

³⁶Sources cite a variety of precursors to the Danish Lego brick, including the American Bild-O-Brick, the British Minibrix (which are essentially inverse Lego), and the Australian Bilda-Brix, among others. (Vale and Vale, *Architecture on the Carpet*, 179–80.)

³⁷Indeed, as they remark, Meccano and Richter’s Blocks are the only competitors in terms of enduring production.

By thinking of the product as a holistic system (*Lego Mursten System i Leg*, or “Lego Bricks System of Play”), the toy became an emblem of reconfigurability not only within each toy set, but across sets and across production years. Since 1958, the company has produced bricks with a strict adherence to consistent underlying design and measurements, thus allowing for an incredible level of interoperability of play (see figure 2.4). Not only did this boost sales (allowing children and adults to “invest” in both small and large Lego purchases), but it also encouraged players to be creative and to think about enduring materiality. This set-focused business strategy has lasted from early Lego bricks through the digital Mindstorms sets and endures to this day, even amidst the addition of major tie-in franchise sets.³⁸

Third generation: digital software toys

Yet another famous Wright³⁹ spearheaded the rise in popularity of a third generation of construction toy: the *digital* construction toy. In much the same way that mass production of interlocking pieces fundamentally changed how children played with early construction toys (allowing for a deeper understanding of construction joints, connections, and physics), the remapping of spatial design practices onto a digital canvas completely shifted the way these toys represented buildings as places *with/in context*. As Lauwaert discusses, digital toys have the ability to be interpreted in new and meaningful ways; he writes, “they provide the interactor (the user who is interacting with the object) with a string of options to actualize the design, thereby making this actualization into a procedural activity...” In so doing, these games “provide the player with a never-ending string of actualizations of design potentials.”⁴⁰

In the mid 1980s, designer and developer Will Wright and his business partner Jeff Braun founded the company *Maxis*. Later purchased by software giant Electronic Arts, *Maxis* was a pioneer of the construction toy, and oversaw the development of three unique (and immensely popular) types of digital construction toys: *SimCity*

³⁸Bumgardner, “The Origins of Mindstorms.”

³⁹Unrelated—I assume.

⁴⁰Lauwaert, *The Place of Play*, 72.

(1989), *The Sims* (2000), and *The Sims Online* (2002). In an interview with *Architectural Record*, Wright describes how he and Braun first pitched their software to other game developers. “In computational terms,” Wright describes, “the game is very open ended. It’s set up as a set of interesting problems that the player has to solve.”⁴¹ His peers were skeptical that a game could be successful without a clearly defined win-state. Nevertheless, Wright and Braun first published *SimCity* in 1989, and the title went on to achieve remarkable commercial success.

The benefits of this open-ended gameplay are multifaceted. At its most basic, the various games in *Maxis’s Sim* series teach players how to solve design-based puzzles through play and experimentation. Each title approaches constructive practice at a different scale, from the city level (*SimCity* and later titles), to the household level (*The Sims* and later titles) to the interpersonal level (real-world relationships in the ill-fated *Sims Online*)⁴².

Beyond the obvious attention to general critical thinking and design, however, Wright also drew significant inspiration from architectural/urban design theorists. The history of this computational approach to urban planning can be traced back to 1950s, when IBM first used computers to map out census data for planning purposes.⁴³ Wright himself specifically references the systems-based work of J.W. Forrester⁴⁴ and Christopher Alexander.⁴⁵ “[Alexander]’s really the ‘anti-architect.’ His gig is to empower regular people to design their own homes and become their own client, which is what *The Sims* is all about,” he describes. Moreover, the *Sims* franchise as a whole emphasizes a philosophy in which the human element is just one factor at play amidst the large-scale, complex context of physical and environmental systems.⁴⁶

Following the spectacular popularity of Wright and Braun’s *Maxis* projects, countless other construction-focused software toys have made their way to the games market.

⁴¹Whitehead, “Will Wright.”

⁴²Lauwaert, *The Place of Play*, 71; Mars, *Game Over*.

⁴³De Monchaux, “Drawing the Map.”

⁴⁴Forrester, *Urban Dynamics*.

⁴⁵Alexander, Ishikawa, and Silverstein, *A Pattern Language*.

⁴⁶Whitehead, “Will Wright,” 80.

It would be foolhardy to try to analyze every single one, however I would also be remiss not to mention the most recent title to sweep across the globe: the enormously successful indie title *Minecraft* (2009, Mojang). *Minecraft's* current popularity and wide-ranging appeal could be the subject of a thesis in its own right, but in chapter 2, I will briefly explore the impact of its status as a modern childhood construction toy.

While these digital spaces undoubtedly teach, at least at a broad level, content related to urban planning and design, their ultimate value as tools for education has been hotly debated. In 1997, communications/computer interaction scholar Sherry Turkle famously argued that these softwares take a black-box approach: they significantly limit players' knowledge of the game's underlying systems and thereby significantly limit the games' ultimate pedagogical value. Referencing a heated dialogue among faculty members at both MIT's Physics Department and its School of Architecture, Turkle compares the simulation game to the computer-aided design tool. She quotes emeritus physics professor Victor Weiskopf, who is said to have frequently told his students, "When you show me that result, the computer understands the answer, but I don't think you understand the answer."⁴⁷ Turkle then goes on to cite a young *SimCity* player who, when asked about what she learned from the game, responded succinctly: "Raising taxes always leads to riots"⁴⁸.

In his treatise on the rhetoric of procedural systems, contemporary game developer, critic and scholar Ian Bogost contests Turkle's conclusion. Simulation systems are not inherently opaque, he argues, but the problem lies in the way we teach students how to "read" their embedded computational logic. Bogost calls for a paradigm shift towards a "procedural literacy," in which the emphasis is instead directed towards "playing a videogame or using procedural system with an eye toward identifying and interpreting the rules that drive that system"⁴⁹. This will pave the way, he argues, for a *procedural rhetoric*, which he defines as:

⁴⁷Quoted in Turkle, "Seeing Through Computers."

⁴⁸Quoted in *ibid.*

⁴⁹Bogost, *Persuasive Games*.

a subdomain of procedural authorship; its arguments are made not through the construction of words or images, but through the authorship of rules of behavior, the construction of dynamic models.⁵⁰

This form of analysis emphasizes the potential learning value of these tools beyond their written/narrative content. It also speaks to Gonzalo Frasca's early observations in "Videogames of the Oppressed," in which he documents how simulation systems fundamentally challenge our traditional notions of authorship.⁵¹ As I will explore further in chapter 2, videogames offer a greater potential for experimentation and player agency than is often recognized by critics. Again in reference to experimentation in education, Turkle states, "not only does the computer make such inductive solutions easier, but as a practical matter, it also makes many of them possible for the first time"⁵². Because the computational power of many computer systems allows operators to quickly iterate, it reinforces the spirit of "fail early and often" and encourages design through experimentation.

Looking past the small-scale play practices of the construction toy (be it physical or digital), there is a parallel, wide-reaching history of play in architecture. Indeed, far beyond the childhood construction toy of the above authors and architects, a number of directly and indirectly playful theoretical frameworks have emerged in the field of architecture since the 19th century. To conclude this chapter, therefore, I direct attention towards a selection of approachable examples of architecture's playful history.

Defining play in architecture

As I have already described, architects have long had a personal connection to play through building and construction. However there is an equally (and undoubtedly) important link between a number of contemporary architectural theories and playful practice in general. The remainder of this chapter draws attention to the link between

⁵⁰Ibid., loc 442.

⁵¹Frasca, "Videogames of the Oppressed"; Bogost, *Persuasive Games*.

⁵²Turkle, "Seeing Through Computers."

such playfulness and its ultimate manifestation as it is embedded in architectural discourse.

First, however, let us establish some ground rules.⁵³ Play is not a free-for-all. Nowhere in this thesis do I advocate for an anything-goes architecture of complete abandon—in fact, it is the exact opposite. “Play is a way of operating a constrained system in a gratifying way,” writes Bogost. “...Play bores through boredom in order to reach the deep truth of ordinary things.”⁵⁴ When we play something (be it a sport, a videogame, an instrument, etc.), we are accepting and embracing *constraints*, not abandon. To play with a toy set is to experiment within the bounds of that set; to play with architectural space is the same. As Charles Eames famously remarked: “design depends largely on constraints.”⁵⁵ This mimics later definitions of the term “game,” as well. For example, philosopher Bernard Suits defines the game as “a voluntary attempt to overcome unnecessary obstacles,”⁵⁶ and contemporary game designer Jesse Schell defines it as “a problem-solving activity, approached with a playful attitude.”⁵⁷

When I describe playful architecture, therefore, I am not describing architecture that treats the design of space with cynicism, nor do I look to architecture that ignores the complex, system-wide implications of its design interventions. Instead, I look to those authors, theorists and designers who take spatial practice completely seriously, who study it on its own terms and are thus able to reconfigure it, creating innovative strategies for being in space. Playful thinking is by no means a new phenomenon in the world of architecture—great theory is underscored by a history of deep and

⁵³All good games need rules.

⁵⁴Bogost, *Play Anything*, loc. 70-88.

⁵⁵“Q: What constraints?

A: The sum of all constraints.

Here is one of the few effective keys to the Design problem: the ability of the Designer to recognize as many of the constraints as possible; his willingness and enthusiasm for working within these constraints. Constraints of price, of size, of strength, of balance, of surface, of time, and so forth. Each problem has its own peculiar list.”

Transcription from Eames Office, LLC, “Design Q & A Text (1972).”

⁵⁶Suits, *The Grasshopper*, 157.

⁵⁷Schell, *The Art of Game Design*, “Problem Solving 101”.

meaningful play.

Utopian Roleplay: Bruno Taut's Crystal Chain

Despite our current historical lens (which often frames Modern architects as stodgy, unrelatable, and elitist) the early utopian underpinnings of European Modernism were remarkably playful. This is perhaps surprising given the political conflict of early 20th century Europe; however, despite the chaos, economic struggles, and systematic violence endured by individuals in post-WWI Germany, the period nonetheless saw a remarkable growth of visionary theory in art and architecture. Nowhere is this more plainly visible than in the movement of German Expressionism (1910-25) and the designs of the Bauhaus (1919-32) that proceeded it.⁵⁸ Born out of a dialogue within the German Werkbund about *Kunstwollen* (“will to form”) versus the accepted *Typisierung* (normative form), these practitioners of early 20th century design spearheaded a massive transformation in the dialogue about the social role of art and architecture. One visible manifestation of this is epitomized in Bruno Taut's Glass Pavilion project, which was intended to inspire its visitors and to act as a catalyst “for the restructuring of society”⁵⁹. Taut developed the pavilion with (and in honor of) his close friend, Paul Scheerbart, whose work ultimately inspired one of the most charmingly utopian architectural explorations of the 19th century: *Die Gläserne Kette* (“The Glass Chain”) correspondence.

Scheerbart was a social butterfly, an idealistic author and a poet; his 1904 ‘folk novel’ *The Emperor of Utopia* included a remarkably prophetic exploration of the role of art and counterculture.⁶⁰ His stories feature a heavy dose of anarchy, and are both antinationalist and antimilitaristic. Scheerbart's unique flavor of futurism continued to show throughout his writing for his entire life.⁶¹ His work is quite forward-looking,

⁵⁸Frampton, *Modern Architecture*, 116–29.

⁵⁹Frampton, “The Glass Chain,” 116; Bletter, “The Interpretation of the Glass Dream-Expressionist Architecture and the History of the Crystal Metaphor.”

⁶⁰Sharp, Scheerbart, and Taut, “Paul Scheerbart's Glass World.”

⁶¹At the time of his death, Scheerbart was seriously attempting to construct for himself a *perpetuum mobile*—despite living in poverty, he spent his extra money on parts to futz with. Bletter, “Paul Scheerbart's Architectural Fantasies.”

as is apparent in his short stories *Transportable Städte* (“Mobile Cities,” 1909) and *Die Stadt auf Reisen* (“The Traveling City,” 1910); both stories feature descriptions of complex, reconfigurable cities designed by an fictional American architect named Cashling. He was an early advocate for urban decentralization and the suburban garden city, as evidenced in in *Die Entwicklung Der Stadt* (“The Evolution of the City”, 1910).⁶²

Later, in his life his stories took a turn towards the fantastic. *Das Luft-Sanatorium* (“The Air Sanatorium,” 1909) and *Aviatik und Baupolizei* (“Aviation and Zoning Board,” 1909) deal with the challenges of operating a floating hospital. *Das Ozeansanatorium für Heukranke* (“The Ocean Sanatorium for Hayfever Sufferers,” 1912) is an epistolary narrative describing a floating oceanic retreat for people with allergies.⁶³ Scheerbart’s utopianism largely anticipated the work of later *avant-garde* artists and architects, including Ivan Leonidov’s “utopian constructivism,”⁶⁴ Wenzel Hablik’s crystalline, floating utopias,⁶⁵ and even Cook’s *Instant City* (1969, *Archigram*).⁶⁶ Building from the ambitious and dynamic architectures described in Scheerbart’s oeuvre, Taut’s pavilion showcased a glittering “glass architecture” that is starkly at odds with our modern notion of the term.⁶⁷

The Glass Pavilion project, developed in collaboration with Taut’s brother Max and his partner Franz Hoffman for the 1914 Werkbund Exhibition, was an experimental palace built primarily out of glass. Rhyming couplets adapted from Paul Scheerbart’s speculative monograph *Glasarchitektur* (also published in 1914) are inscribed around the exterior of the space. These poems treated glass with an otherworldly reverence, continuing a long trend in German Romanticism.⁶⁸ Scheerbart included phrases such

⁶²Ibid.

⁶³Ibid.

⁶⁴Sharp, Scheerbart, and Taut, “Paul Scheerbart’s Glass World”; Lowe, “Channeling the Past.”

⁶⁵Benson, Frisby, and Los Angeles County Museum of Art, *Expressionist Utopias*; Weinstein, “Review of Expressionist Utopias”; Curl and Wilson, “Hablik, Wenzel August.”

⁶⁶Cook, *Archigram*; Sharp, Scheerbart, and Taut, “Paul Scheerbart’s Glass World.”

⁶⁷Glass is a material that would later be associated with the sleek, stark, and simple linear language of High Modernism.

⁶⁸As Kinchin, “The Crystal Chain and Architectural Play.” describes, Friedrich Fröbel

as “colored glass destroys hatred” and “glass brings us a new era, building in brick only does us harm.”⁶⁹ Neither of the Taut brothers had formal architectural training (nor did Scheerbart), but their inclusion in the Cologne exhibition nonetheless situated their work in a dialogue with Walter Gropius and Henri van de Velde’s important Werkbund architectures.⁷⁰ Although Scheerbart died in 1915, Taut continued to explore his friend’s creative visions through his own sketches, collaborations, and ultimately his own publications. Notably, Taut’s 1919 collection of sketches *Alpine Architektur* drew heavily from Scheerbart’s utopian dreams—the 30 illustrated plates are divided into 5 themes: *Kristallhaus* (“The Crystal House”), *Architektur der Berge* (“Architecture in the Mountains”), *Der Alpenbau* (“Alpine Building”), *Erdrindenbau* (“Terrestrial Building”), and *Sternbau* (“Astral Building”).⁷¹

In response to the violence and irrationality of World War I and the tense political climate of post-armistice Europe, Taut (along with architects Gropius and Adolf Behne) helped to establish an *Arbeitsrat für Kunst* (“Workers Council for Art”).⁷² Their collective explored new ways to decentralize and democratize the production of art and architecture.⁷³ Despite the overwhelming challenges of life in post-WWI Germany, the *Arbeitsrat*’s work was visionary and experimental. The group’s public face was largely silenced following the Spartacist Uprising of 1919, but their creative collaboration continued in a “utopian correspondence.”⁷⁴ Taut’s chain letter, retroactively titled *Die Gläserne Kette* circulated among 14 of the *Arbeitsrat* architects, including Gropius, Hans Sharoun, Hermann Finsterlin, Hans and Wassili Luckhardt, and Max

had a similar mystic appreciation of glass, owing to the years he spent cataloging the Mineralogical Museum collection at the University of Berlin. Rubin cites this history with crystallography as a core driver of his pedagogical work Rubin, “The Froebel-Wright Kindergarten Connection.” Photographs of some of his early crystal-shaped blocks are available in *ibid.*, .

⁶⁹As translated in Kinchin, “The Crystal Chain and Architectural Play,” 61.

⁷⁰Sharp, Scheerbart, and Taut, “Paul Scheerbart’s Glass World”; Frampton, “The Glass Chain.”

⁷¹Scheerbart and Taut, *Glass Architecture and Alpine Architecture*.

⁷²Conrads, *Programs and Manifestoes*, 44.

⁷³During the Weimar period, the *Arbeitsrat* joined forces with Max Pechstein and César Klein’s radical *Novembergruppe* Frampton, “The Glass Chain,” 117; Fagernes, “Die Novembergruppe.”

⁷⁴Frampton, “The Glass Chain.”

Taut. Building from Scheerbart's *Glasarchitektur*, the *Gläserne Kette* imagined incredible utopias formed out of a mixture of colorful organic shapes and evocative crystalline structures.⁷⁵

Taut's interpretation of this utopian architectural future was quite playful. In his *Frühlicht* ("Daybreak"), a magazine supplementing the urban planning publication *Stadtbaukunst alter und neuer Zeit* ("Urban Architecture Ancient and Modern"), he published some of the contents of the chain letter. In addition, he used the platform to advocate for his ebullient personal architectural visions, best summarized in his 1920 manifesto titled "Down with seriousness!"⁷⁶ In it, he exclaims:

Away with the sourpusses, the wailing Willies, the sobersides, the brow furrowers, the eternally serious, the sweet-sour ones, the forever important! 'Important! Important!' This damned habit of acting important! Tombstone and cemetery façades in front of junk shops and old clothes stores! Smash the shell-lime Doric, Ionic and Corinthian columns, demolish the pinheads! Down with the 'respectability' of sandstone and plate-glass, in fragments with the rubbish of marble and precious wood, to the garbage heap with all that junk! [...] Death to everything called title, dignity, authority! Down with everything serious!⁷⁷

After fourteen issues, the editors of *Stadtbaukunst* grew tired of Taut's provocative work. In July of 1920, not long after the publication of this manifesto, his supplemental magazine was pulled from circulation. Undeterred, Taut continued to publish *Frühlicht* as a stand-alone publication from 1921.⁷⁸

The *Gläserne Kette* itself was, in a way, a sort of architectural roleplaying game.⁷⁹ Each member took up a pen-name within the circle (Taut was *Glas*, Gropius was

⁷⁵Whyte and Taut, *The Crystal Chain Letters*; Calatrava, "La Cadena de Cristal"; Curl and Wilson, "Gläserne Kette."

⁷⁶Conrads, *Programs and Manifestoes*.

⁷⁷As excerpted in *ibid.*, 57–58.

⁷⁸Bletter, "Paul Scheerbart's Architectural Fantasies."

⁷⁹One might even go so far as to call it an early predecessor to the augmented reality game (ARG).

Mass, Finsterlin was *Prometh*, etc.)⁸⁰. Across more than a year of correspondence, members of the the chain letter created a vast collection of writings and sketches, each depicting grand utopian visions. The letters often made reference to childhood play practice—Finsterlin reportedly developed his architectural designs exclusively by playing and drawing with his children. Taut himself developed a system of toy blocks made of colored glass, which he called “Dandanah, The Fairy Palace.”⁸¹

The history of visionary architectural sketching neither began nor ended with the *Gläserne Kette*—their work followed in a long line of “paper” projects (cf. Giovanni Battista Piranesi’s *Imaginary Prisons*,⁸² or Etienne-Louis Boullée’s Cenotaph for Isaac Newton⁸³) and was followed by still more, including the work of *Archigram*.⁸⁴ However, the playful underlying message, along with the actual game-like roleplay through which the circle communicated, makes this project notable. The *Gläserne Kette* tackled monumental social issues through ludic improvisation, and in so doing, paved the way for “non-serious” projects to enter into architectural discourse. Indeed, long after the circulation of the chain letter, Gropius and his *Staatliches Bauhaus* continued with a playful practice of architecture. Nowhere is this more prominent than in the charmingly bizarre dances and costumes of “The Dancing Artist,” Oskar Schlemmer.⁸⁵ These works are remembered not only by merit of their designs, but also through the charming and enthusiastic sincerity of their utopian visions.

⁸⁰The full list of pseudonyms is as follows: Bruno Taut (“Glas”), Wilhelm Brückmann (“Berxbach”), Alfred Brust (“Cor”), Hermann Finsterlin (“Prometh”), Paul Goesch (“Tancred”), Jacobus Goettel (“Stellarius”), Walter Gropius (“Mass”), Wenzel Hablik (“W.H.”), Hans Hansen (“Antschmitz”), Hans and Wassili Luckhardt (“Angkor” and “Zacken”), and Hans Scharoun (“Hannes”). Max Taut was the only member to use his own name. Whyte and Taut, *The Crystal Chain Letters*; Calatrava, “La Cadena de Cristal.”

⁸¹Kinchin, “The Crystal Chain and Architectural Play”; Museum of Modern Art, “Century of the Child.”

⁸²Princeton University Art Museum, “Imaginary Prisons.”

⁸³Boullée, [*Cénotaphe de Newton*].

⁸⁴Coleman, *Imagining and Making the World*.

⁸⁵“Schlemmer, Oskar”; see also the recent exhibition of Schlemmer’s work at the Centre Pompidou Metz, showcased in “Oskar Schlemmer’s Ballet of Geometry in Pictures.”

Playing in Paris: Benjamin's *Passagen-Werk*

The playful exploration of the European urban condition was not limited to fantastical paper architectures, however. Early 20th century life continued amidst a backdrop of intense political drama. As theorists began to explore the nature of life in the city, the focus shifted inwards, towards a contemplative examination of everyday life. Despite the whirlwind of challenges, these theorists took a serious look at what it means to experience place and space on a very human level. In particular, the city of Paris, France was a hotbed of revolutionary political and social theory.

In his philosophical musings on the current nature of play, Bogost describes an attempt to look for play in mundane, quotidian spaces. He embarks on a trip to an Atlanta Walmart Supercenter, whereupon he proceeds to document an absurd list of consumer goods. “Playing big-box archaeologist,” he writes, “I excavated specimens from every aisle, as if for a natural history molded from proteins and plastics.”⁸⁶ He is left with a comedic litany.

Ultimately, Bogost asks the following question: “what if, instead of assuming that things like deodorant and dishwashers were just noise, distractions we have to suffer to get to the good stuff, we treated them instead as sources of potential intrigue, delight, and joy?”⁸⁷ Although his observations are undoubtedly contemporary, this playful big-box store litany traces its lineage back to a key figure in architectural theory: German philosopher Walter Benjamin. Indeed, Bogost’s critique has a direct parallel with the practices of spatial critique introduced in Benjamin’s epic *Passagen-werk* (*Arcades Project*, 1927-1940) and has a playful character similar to that of Robert Smithson’s “A Tour of the Monuments of Passaic, New Jersey” (1967). Each is an example of *serious play* (i.e. the practice of play which explores meaning through a deep reverence of its subject) made manifest in architectural theory.

Benjamin’s seminal (and unfinished) *Arcades Project* looked at 19th century Paris on its own terms, and thereby pulled from it the equally mundane, and spectacular—

⁸⁶Bogost, *Play Anything*, 28.

⁸⁷Ibid.

but nonetheless deeply meaningful—relationships between the social, economic and architectural structures of urbanism.⁸⁸ For Benjamin, the objects and conditions of the city offered a view into the physical manifestation of the “phantasmagorias” of daily life. His novel reading of Paris largely focuses on the city’s descent into consumerism, and the various ways in which capitalist consumption separates one from their urban reality. Benjamin makes frequent reference to Baudelaire’s *flâneur*, a character defined by the act of meandering passively through spaces. Ultimately, he encouraged a new approach to historiography. History, he points out, can be seen in the intersection of objects and being; it is itself an exploratory practice.⁸⁹ Indeed, Benjamin’s methodology continues to be leveraged for modern social critique to this day (see for example, Robert Luke’s playful commentary on the modern “phoneur”⁹⁰).

Just as with Bogost’s study of the Walmart Supercenter, traces of Benjamin’s methodology of experiential documentation are also visible in a spatial exploration conducted by earthwork artist Robert Smithson in 1967. In his “Tour of the Monuments of Passaic, New Jersey”, Smithson documents forgotten conditions of infrastructure (which he christens suburban “monuments”) and records them with absurdly grand names (e.g. “The Great Pipes Monument”). Much like Benjamin, Smithson’s playful critique of Passaic is quite genuine: he records and appreciates the (often absurd) condition of the built environment as it actually is rather than pining for an impossible utopia.⁹¹

Guy Debord: War games and the spectacle

Years after Benjamin’s suicide, Paris would again serve as inspiration for a new form of theoretical, place-based play, specifically in the mimetic play of Guy Debord. Debord was a Marxist, a filmmaker, and one of the founders of the Situationist Inter-

⁸⁸Bogost, *Unit Operations*, 112.

⁸⁹Osborne and Charles, “Walter Benjamin”; Bogost, *Unit Operations*; Buck-Morss, *The Dialectics of Seeing*.

⁹⁰I.e. “the postmodern flâneur,” Luke, “The Phoneur,” 4.

⁹¹Smithson and Flam, *Robert Smithson, the Collected Writings*; Holt-Smithson Foundation, “Monuments of Passaic.”

national movement (along with Constant Nieuwenhuijs and Asger Jorn). In general, the the movement sought to address the role of the individual in an increasingly stark, crowded, and capitalist urban landscape. Their primary publication, a 12 issue journal titled *Internationale Situationiste (Situationalist International)*, specifically targeted the everyday condition of life in the city. Addressing the inhumanity of functionalism, the group circulated theories of architecture and urbanism that rejected (or at least questioned) Modernist rationality by embracing human creativity and subjectivity.⁹²

Debord's major contribution to this collective (and, indeed, to the architectural discourse as a whole) came to fruition with his theory of "the spectacle." His cultural criticism was largely defined by the shifting media and technology of the early 20th century. He saw passive consumption of the image increasingly becoming a fixture of culture. The solution to this, according to Debord, is a recognition and rejection of passivity; social critique was best explored by embracing "active engagement" with sites and conditions.⁹³ His work often addresses this through metaphors of military operations—his *dérive* is a strategy of reaffirming agency by "reappropriating urban space and rediscovering its qualities,"⁹⁴ and his random events of *détournement* attempted to deconstruct and reconfigure the day-to-day images of capitalism.⁹⁵

However, despite these serious explorations into the challenges of mass culture and the capitalist urban condition, *Situationalist International* overall (and Debord's work in particular) was quite playful. Human ingenuity and creativity were greatly encouraged.⁹⁶ For Debord, much like the Exquisite Corpse games played by the preceding Surrealists, radical creativity required one to relinquish control. Debord's *dérive* is an activity in which one gives oneself over completely to the environment.⁹⁷

⁹²Schrijver, *Radical Games*, 43–49.

⁹³Debord, *The Society of the Spectacle*; Schrijver, *Radical Games*, 50.

⁹⁴Schrijver, *Radical Games*, 50.

⁹⁵Debord, *The Society of the Spectacle*; Schrijver, *Radical Games* p 50.

⁹⁶Schrijver, *Radical Games*.

⁹⁷Kochhar-Lindgren, Schneiderman, and Denlinger, *The Exquisite Corpse*; Schrijver, *Radical Games*.

Late in his life, Debord also ventured directly into the world of games with his *Le Jeu de la Guerre*. Debord first proposed the project in 1965, when he theorized about a game that could “reproduce exactly all the factors that act in war, and more generally the dialectic of all conflicts.”⁹⁸ Throughout the development process, Debord and his spouse Alice Becker-Ho are said to have played the game frequently. The physical version of *Le Jeu de la Guerre* was released in a limited run in 1977, and the rules have since been republished in French and translated into English. Alexander Galloway, a game designer and professor at NYU, has also translated the game into a digital format, published by the Radical Software Group collective. Featuring only minor adjustments to Debord’s original ruleset, Galloway’s digital edition is available online under the title *Kriegspiel*.⁹⁹

Media/technology in architecture

So far, much of this study has focused on the history of play as it pertains directly to the design and analysis of built form. But what of the myriad ways in which spaces are made manifest outside of the traditionally defined built environment? Whereas much of standard architectural discourse focuses solely on the representation of space *in* media, this paper also supposes that architectural practice can also take form *as* media, following Beatriz Colomina.¹⁰⁰ Colomina pinpoints photography (and its role in the emerging media landscape from the 1940s until now) as having brought about a total shift away from architecture as object towards architecture as media spectacle. The rise of the photographic image fundamentally changed the way we view the world and altered our interpretation of space. In the age of the photograph, architecture ceases to be something one experiences only through physical presence. Instead, it becomes a static image for consumption, a vignette of a space frozen in

⁹⁸ «reproduit exactement la totalité des facteurs qui agissent à la guerre, et plus généralement la dialectique de tous les conflits.» (Delahaye, “Le wargame de Guy Debord in situ,” translation by author.)

⁹⁹ McGrath, “War Games”; Radical Software Group, “Kriegspiel”; Garrett, “RSG’s Kriegspiel, an Interview with Alex Galloway”; Guy, “ Effigiem Belli , Guy Debord Stratège et Cartographe.”

¹⁰⁰ “Media As Modern Architecture.”

time. “The image is the project,” she writes. “... If [the] designs are built, they are handed down, as it were, to the occupants as a kind of used prop to inhabit.”¹⁰¹

Plug-and-play: Archigram, zines and countercultural archiplay

In the print media and zine culture of 1960s and 70s, a new form of *counter-cultural play* began to take form in the world of architecture. The publication *Archigram* (a portmanteau of “architecture” and “telegram”), was first published in 1961 by Warren Chalk, Peter Cook, Dennis Compton, David Greene, Ron Herron and Michael Webb. It featured playful, *avant-garde* urban design ideas presented in vibrant and creative sketches and collages.¹⁰² The production magazine itself was quite playful, as well: the first issue was printed on 2 sheets of paper and produced with an office duplicator machine. Like the publications of Debord’s *S.I.* (or even, to some degree, Corbu’s *L’Esprit Nouveau*), *Archigram*’s circulation was quite small. Their first publication sold around 300 copies, and their final had circulation numbers of around 5000.¹⁰³ Much of their work directly co-opted popular culture, specifically through collage and other *bricoleur*-style reimagining (see, for example, Herron’s “Tuned Suburb,” 1968,¹⁰⁴ figure 2.5).

Much of *Archigram*’s work sought to incorporate novel uses of technology into the everyday experience of human life. In this way, *Archigram*’s lineage is more directly tied to Modernism than is often acknowledged; as Schrijver writes, the group was “certain that someday in the future there would be more leisure and much pleasure to be had due to the wonders of modern technology.”¹⁰⁵ Regardless, theories about relationship between architecture, technology and human beings underwent signifi-

¹⁰¹66–67.

¹⁰²University of Westminster Centre for Experimental Practice, “Archigram Archival Project.”

¹⁰³Schrijver, *Radical Games* p 96.

¹⁰⁴University of Westminster Centre for Experimental Practice, “Archigram Archival Project.”

¹⁰⁵Schrijver, *Radical Games*, 99.

cant (but productive) turmoil during this period. Following Banham (1960)¹⁰⁶ and McLuhan (1964),¹⁰⁷ much of the discourse surrounding the technologies of modern architecture involved the Heideggerian idea of technological determinism: the notion that technological advance itself will lead to advances in human society and culture.¹⁰⁸ Peter Cook is famously quoted as saying “the pre-packaged frozen lunch is more important than Palladio,” in reference to the intersection of technology, economy, and human creativity that made such ingenious inventions (in contrast to the “transcendent” values of modernism) possible.¹⁰⁹

In addition to the publication’s visual style, *Archigram*’s connection to popular art and culture included prominent narratives of space-age speculative fiction, which eventually lead the collective’s work to become increasingly untethered from traditional notions of architecture. From the urban-scale scaffolding projects of Cook’s famous “Plug-In City” (1964), to Michael Webb’s nomadic “Cushicle” (1966-7) or his spacesuit-like “Suitaloon” (1968),¹¹⁰ these projects all emphasized technological advancement *as* architectural advancement beyond the traditional “built environment.”

One significant departure from the stodgy Modernist utopias, however, is the incorporation of absurdity and levity into the projects. Archigram, writes Schrijver, “was intended to remove technology from its transcendent throne—to reintroduce the idea that technology was meant to serve the ideas and interests of people rather than the other way around.”¹¹¹ Similar themes of technological reconfigurability and cybernetic behaviors can be seen in the work of Cedric Price, whose expansive 1960s Fun Palace project proposed leveraging early computer logic and game theory to create unique architectural event spaces. By collecting and interpreting information about the use of the building, the system would adapt and rewrite itself to future users. Price’s project attempts to leverage the power of technology to allow people

¹⁰⁶Banham, *Theory and Design in the First Machine Age*.

¹⁰⁷McLuhan and Gordon, *Understanding Media*.

¹⁰⁸To be fair, we have still not come to terms with the role of technology *vis-à-vis* the interplay between control/dominance in our lives today. Schrijver, *Radical Games*, 101

¹⁰⁹Ibid., 95.

¹¹⁰Cook, *Archigram*; Schrijver, *Radical Games*, 97, 118.

¹¹¹Schrijver, *Radical Games*, 127.

to facilitate their own “architectural emancipation.”¹¹²

As a more modern example of alternative exploration playful architectural practice distributed through print media, we can look to the revolutionary play of culture jammers, specifically as seen in the social protest projects of the Yes Men¹¹³ and the collaborative, spatial spirit of Kalle Lasn’s *Adbusters* magazine. *Adbusters*, a long-running publication, was deeply aware of the spatial implications of their brickspace political interventions. Their highly visible Occupy movement drew in large part from from Lévi-Strauss’s *bricoleur*—“playful recycling”—along with Deleuze and Guattari’s theories of rhizomatic cognition.¹¹⁴ This movement overall, and specifically the uniquely playful brand of activism embedded in the designs and actions of the “Town Planning Working Group,”¹¹⁵ represents a new form of spacemaking; one which subverts traditional paradigms of transaction and capital and proclaims that “another world is possible.”

The above examples each leverage technological adaptations in order to reconfigure social norms. This commentary is similar to that of Knut Sørensen, who writes extensively on the nature of “domesticated” technology. Specifically, he observes that familiarizing ourselves with technology ultimately leads to a process through which objects and technological concepts take on an element of the social.¹¹⁶ Just as Lauwaert describes, this democratized, many-to-many model is indicative of a significant change in our understanding of complex networks and relationships; it “indicates a shift from the domination of expert knowledge and content to an increase in end-user knowledge and content.”¹¹⁷

¹¹²Mathews, “The Fun Palace as Virtual Architecture.”

¹¹³Specifically, see their “Halliburton Survivaball” project, which imagined an absurd leisure suit for our future anthropogenic climate apocalypse. *The Yes Men Fix The World (P2P Edition)*.

¹¹⁴Mathews, “The Fun Palace as Virtual Architecture.”

¹¹⁵NYC General Assembly, “Town Planning Working Group Minutes.”

¹¹⁶Sørensen, “Domestication.”

¹¹⁷*The Place of Play*, 132.

Tschumi, cinema, and spatial storytelling

Architecture and the media landscape are constantly (and simultaneously) undergoing a process of transformation. Photography and print are certainly not the only media to sink their teeth into the world of architecture, however. The rise of cinema required filmmakers to invent new techniques to establish a consistent spatial narrative through 2D visual cues. Indeed, the act of viewing a space recorded in a film has a similar feel (at least at a basic level) to the act of viewing a photograph: it is a 2D representation of an (often, at least in the case of film, illusory) 3D space. Through montage, lighting and point-of-view (POV), filmmakers use frame (and rapid single images) to piece together time and space.¹¹⁸

Architect Bernard Tschumi, in turn, drew on these filmic techniques for his *Manhattan Transcripts*,¹¹⁹ in which he crafted an illustrated narrative describing the various ways in which people and architecture collide. The purpose of the project, he writes, “is to transcribe things normally removed from conventional architectural representation, namely the complex relationship between spaces and their use; between the set and the script; between ‘type’ and ‘program’; between objects and events”¹²⁰. Indeed, as Vidler presents in his retrospective on Tschumi’s work for *The Architectural Review*, Tschumi treated the act of architecture as play on an urban-scale game board.¹²¹

Other forms of media (for example, the rise of digital music and the .mp3) have similarly fractured and reconfigured the ways that we parse and interpret space in day-to-day life. To that point, film theorist James Monaco critiques the Walkman (and its modern descendant, the iPod) as having brought about a dramatic shift in our aural experience of architecture. The advent of Muzak in public spaces (1960s-1970s) and the later role of broadcast media as creating, he argues, created a constant, cinematic backtrack for public spaces. Today, however, the widespread

¹¹⁸Monaco, *How to Read a Film*; Galloway, *Gaming*.

¹¹⁹*The Manhattan Transcripts*.

¹²⁰Ibid., p 7.

¹²¹Vidler, “After the Event.”

use of personal audio devices shift to a private, personalized soundtrack for daily life. “If the Walkman was the first step to private virtual realities,” he writes, “the cellular phone was the second... it is conceivable that there could come a time soon when *absolutely no one will be listening to the real world.*”¹²²

A new media frontier: architecture and games

Construction toys map similar processes as the above theories to a much smaller, more innocent scale, but they are ultimately two sides of the same coin. Whether interventions occur at the level of the Lego block or the city block, the process of placemaking is nonetheless a playful approach to seizing spatial agency. Architecture is inherently multidisciplinary, and is thus malleable enough to incorporate theories from a broad spectrum of thinkers and makers. The process of designing spaces (regardless of medium), is often highly playful. It is, as I will explore in the following chapters, a strategy for designing new worlds and reconstructing social practices.

When we consider the role of the *digital* image, however, there is a vestigial (but nonetheless significant) disconnect between its role in theory and its application in practice. As previously established, the still image has long been the subject of serious consideration in architecture. Analysis of digital images, however, is rarely treated with the same degree of nuance. As Damian Jovanovic writes, this misunderstanding arises out of a longstanding tendency towards “disregarding software specificity and focusing on simulations of the traditional design medium in software in an attempt to preserve the discipline as it was historically.” Additionally, architects frequently fall into the trap of “amplifying the incidental and non-disciplinary effects of software [...] using it as a tool for simulation of natural processes.”¹²³ While Computer Aided Design (CAD) and Building Information Management (BIM) tools are undoubtedly valuable from a project management standpoint, Jovanovic argues, it is telling that the most interesting works of digital architecture come not from AutoCAD, Catia and Revit, but instead from tools developed for the entertainment industry: specif-

¹²²Monaco, *How to Read a Film*, 71, emphasis in original.

¹²³Jovanovic, “Fictions,” 30.

ically for game design, SFX and animation. “It is no wonder,” he writes “that the most interesting design work today comes from the use of exotic and custom-made software or software whose original area of application is not architecture—Maya, ZBrush, Softimage, Houdini, Unity—or directly from programming languages like Processing.”¹²⁴

In this regard, the dialogue between architecture and media has undergone a major transformation in today’s digital landscape. Building off of Marshal McLuhan’s historical analysis of new media¹²⁵ and Lev Manovich’s observation that software acts as “meta-media” (an aggregate of all prior forms of media)¹²⁶, Jovanovic establishes a history of software as it has been used as a speculative design medium. Ultimately, he makes the case that the process of digital architecture (as crafted through both still and real-time renderings) implies an entirely new method of meaning-making in architecture. “What is needed is a radical embrace of software specificity understood as a new *visuality*—that is, a radically new *vision system* for architecture—and as a new ground for *architectural fictions*.”¹²⁷

Works of architecture are now constructed entirely in virtual space before they are built in “brickspace.” Architects are able to “play” with and within spaces: to navigate them, to push and pull volumes in real time, and more. In much the same way that Colomina describes the images of the Modernists’ architectural models *as* architecture, the digitally constructed model *is* the new architecture. And, just as she describes the staged photographic images of Modernism, the built spaces are doomed to forever pale (or at least differ greatly from) their digitally rendered imaginings.¹²⁸ Thus, building off of both Colomina and Jovanovic’s analyses, I propose that a digital rebirth of architecture is occurring in parallel with another spatial media, the digital videogame. It is towards this new architectural frontier that I focus of the remainder

¹²⁴Ibid., 30.

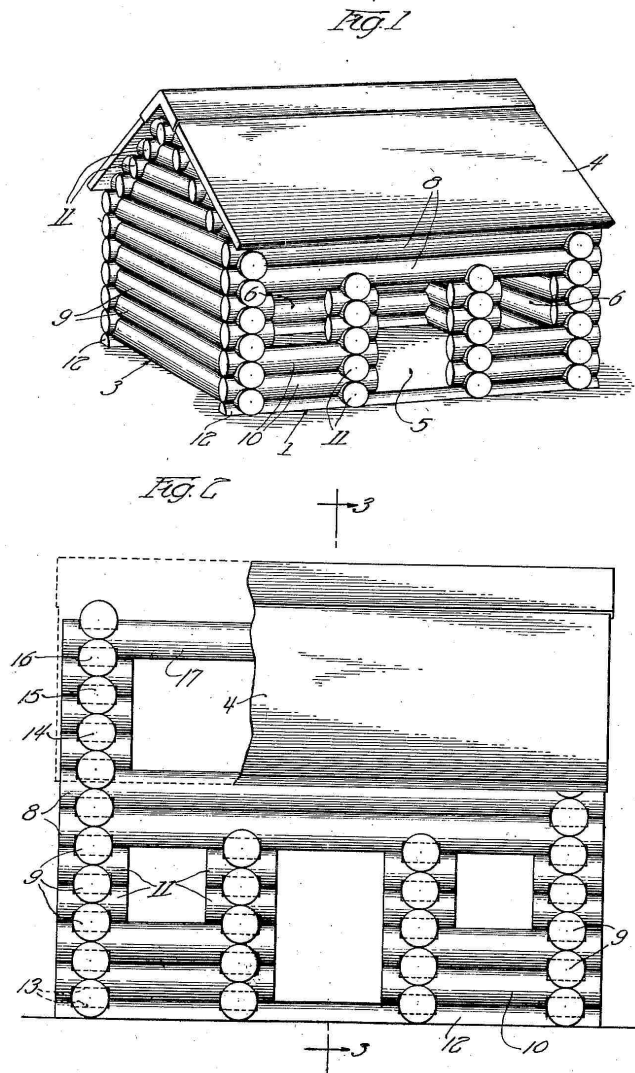
¹²⁵McLuhan observed that new forms of media first attempt to simulate old forms of media before they inevitably overtake and replace them. The result is a shift in function of both old and new forms of media. McLuhan and Gordon, *Understanding Media*

¹²⁶Manovich, *Software Takes Command*.

¹²⁷Jovanovic, “Fictions.”

¹²⁸Colomina, “Media As Modern Architecture.”

J. L. WRIGHT,
TOY CABIN CONSTRUCTION,
APPLICATION FILED JAN. 8, 1920.
1,351,086. Patented Aug. 31, 1920.
2 SHEETS—SHEET 1.



Inventor
John Lloyd Wright
Effel & Coles
Attys.

Figure 2.2: US patent number US1351086 A, 31 Aug 1920. Toy-cabin construction. John Lloyd Wright.

F. HORNBY.
TOY OR WORKING MODEL,
APPLICATION FILED FEB. 28, 1914.
1,166,688. Patented Jan. 4, 1916.
2 SHEETS—SHEET 1.

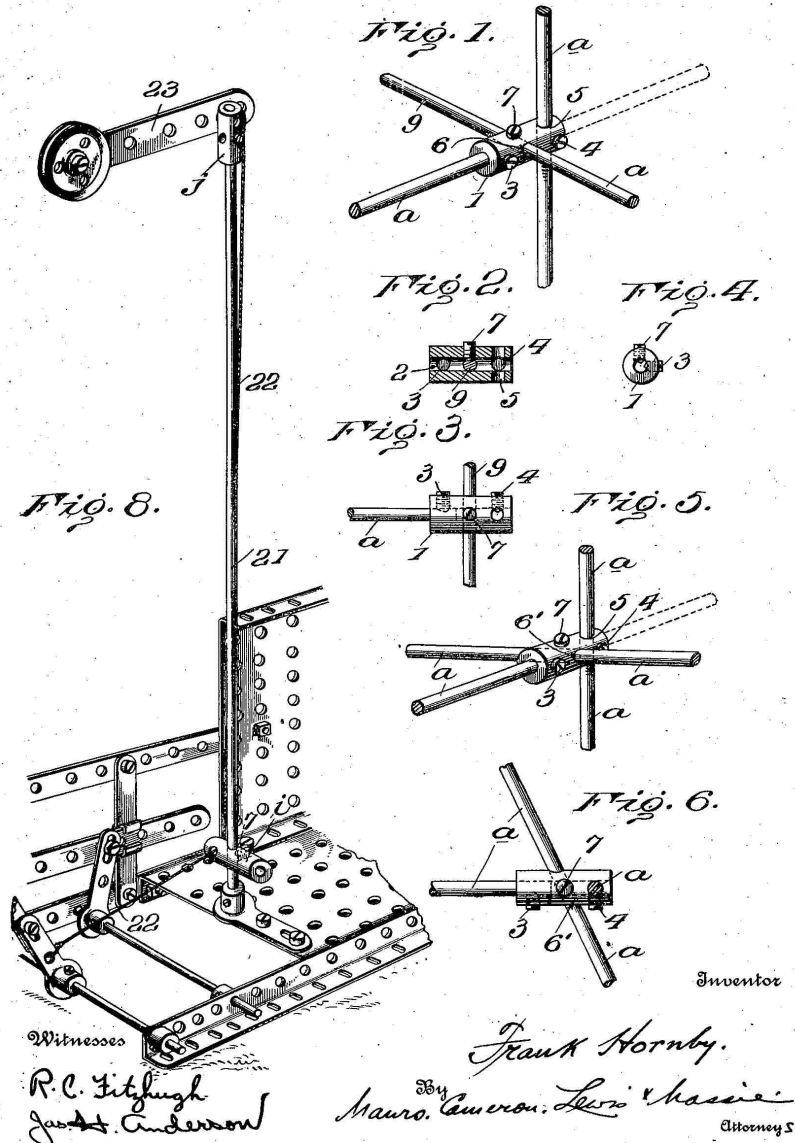


Figure 2.3: US Patent No. US1166688A, 12 April, 1915. Toy or working model. Frank Hornby, Meccano Ltd.

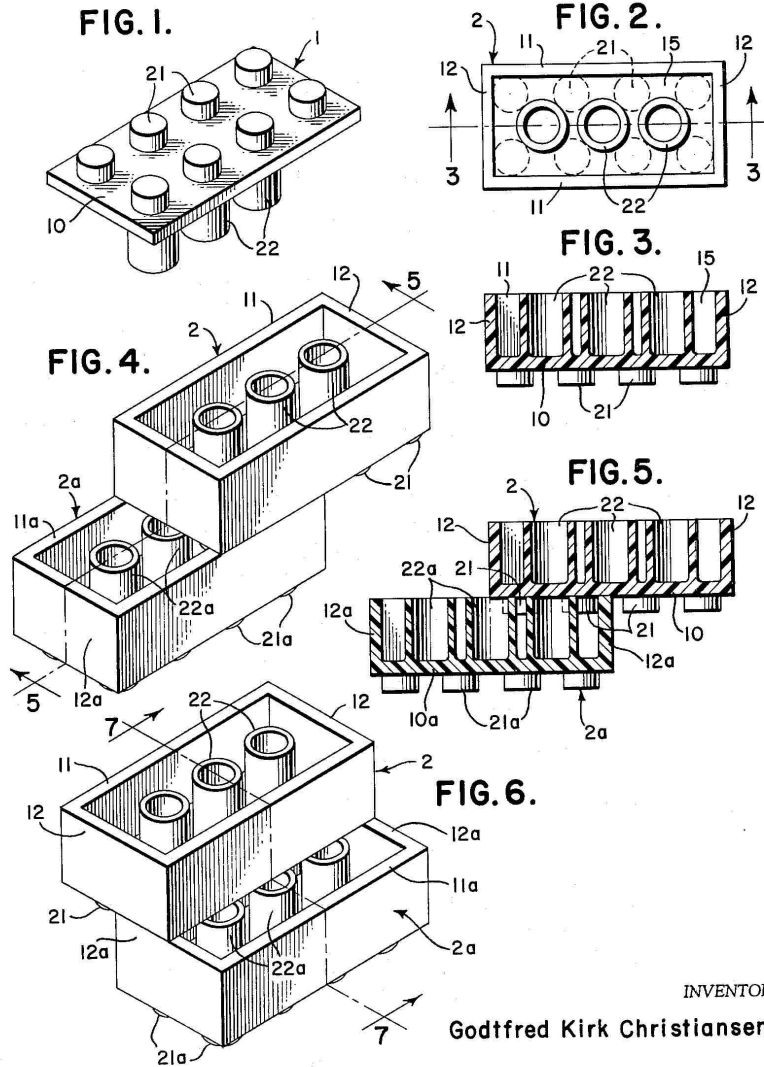
Oct. 24, 1961

G. K. CHRISTIANSEN
TOY BUILDING BRICK

3,005,282

Filed July 28, 1958

2 Sheets-Sheet 1



INVENTOR

Godtfred Kirk Christiansen

BY
Stevens, Davis, Miller, & Marsh
ATTORNEYS

Figure 2.4: US Patent No. US3005282 A, 24 Oct 1961. Toy building brick. Godtfred Kirk Christiansen.



Figure 2.5: Tuned Suburb. Ron Herron, 1968. © Archigram Archival Project.

Chapter 3

Worldbuilding

Explorations into play and game space

So far, this exploration of spaces of play has been fairly abstract, looking at the ways in which play manifests in architectural theories of both childhood education and adult practice. However, beyond cursory mentions of architectural context, I have thus far made little reference to the actual role of game space in these playful situations. For that, I turn to a different medium entirely: the world of videogames.¹ These packaged digital spaces are, in essence, constructed universes for play and discovery, and the relatively low cost to access these spaces makes them fairly ubiquitous among tech users. As such, they are an invaluable starting point for an analysis of worldbuilding as spatial practice.

Some notes about methodology

I am of the position that the distinction between digital and other forms of fictional worlds (imagined worlds as found in tabletop gaming, for example, or in the alternate reality games, or ARGs, explored by Jenkins²) is a valuable discussion, but one with little bearing on the ultimate implications of space and play. As such, I only briefly explore the role of digital technology insofar as it has expanded the opportunity and

¹Except in direct quotations, I use the term "videogame" over "video game," following Bateman's rationale in *Imaginary Games*, 8.

²*Convergence Culture*.

access to creation and consumption of play spaces. Instead, I favor looking at these mediated environments as encapsulated works of architecture unto themselves.

I take this position for a variety of reasons. First and foremost, play actions are not limited only to play events involving screens. Exploring the differences between play media is useful for identifying broad patterns in play, but has limited value for understanding core mechanics of play. Recognizing that game spaces *are* spaces (albeit with different rules of interaction), therefore affords us the opportunity to look beyond arguments regarding the nature of the screen.

I am similarly hesitant to describe the phenomenon of expanded, real world gameplay behaviors in terms of “gamification.” In its current manifestation, the term is often applied to a harmful strategy of self-regulation and restriction (rule-making) that negatively exploits addictive functions with disregard to their lasting effects. On the flip side, top-down approaches to gamification create meaningless, arbitrary and short-lived behavior patterns that often do little to underscore the underlying importance of the developed habits Bogost.³ Neither approach supports sustainable, mindful self-improvement. This is not to say that there are not valid uses for “gamifying” our lives, but we should be careful with the implications when it comes to less-positive gaming interactions. Again, from Bogost, “imagine if all those people trying to add ‘fun’ to their products and services redoubled their commitment to the experience of using them?”⁴

Additionally, I recognize that readers may not be familiar with popular titles or with the games industry in general. As such, I provide a glossary, ludography and also explanatory footnotes wherever possible/needed. Videogame studies, as with any other academic discipline, is replete with jargon (often appropriated from other disciplines). I have done my best to anticipate potential areas of confusion within this manuscript.

³“Why Gamification Is Bullshit.”

⁴*WIRED by Design*, 9:36.

Growing up in game worlds

I was raised in digital spaces; for me, the process of storytelling has always had deep spatial implications. My very first game worlds primarily explored childhood nursery rhymes, notably Roberta Williams' *Mixed-Up Mother Goose*⁵ and Howie Mandel's *Tuneland*⁶.

This occurred in parallel with a more formal education via gamespaces, as evidenced by the edutainment games I played at school: *Oregon Trail* and *Kidpix*.⁷

Later, my parents provided me with access to a series of point-and-click adventure games created by Humongous Entertainment. I explored the worlds of:

- the *Freddi Fish* games, an aquatic detective series in which Freddi the goldfish and her friend Luther solve crimes (a piscine Nancy Drew, of sorts).
- the *Putt-Putt* games, a series of adventure games focusing on a young, anthropomorphic car and his pet dog.
- the *Pajama Sam* games, a series of games in which a young protagonist imagines and explores spectacular worlds in order to learn how to appropriately cope with his fears (including darkness, thunder, vegetables).⁸
- *Spy Fox* series, a punny homage to the spy thriller (somewhere between Maxwell Smart and James Bond), in which the suave, vulpine secret agent prevents a series of absurd calamities caused by even more absurd villains.

Many of these games were built on Lucasfilm Games' SCUMM engine, which powered other, more mature game titles, as well. Indeed, Lucasarts' own point-and-click

⁵A game in which you help Mother Goose restore her "mixed-up" nursery rhymes by solving puzzles and gathering items, Sierra On-Line Inc, *Mixed-Up Mother Goose*.

⁶An adventure game set on Old MacDonald's farm, Chow, "TUNELAND from 7th Level."

⁷An MS Paint-like game for children; we had it on all the school computers and it was infinitely more fun than the more serious typing games we were encouraged to play.

⁸The series also included a spin-off puzzle game, *Sock Works*, which involved manipulating an elaborate series of conveyor belts to sort socks in appropriate laundry bins.

adventure games were later favorites of mine, specifically the madcap world of Ron Gilbert's *Monkey Island* series (which I first purchased at school through Scholastic). In the original four-game series, young buccaneer wannabe Guybrush Threepwood sets out on a series of ill-fated adventures to gain pirate glory.

The above games have all been retroactively defined as *adventure games* (sometimes, more specifically, as *point-and-click adventure games*), a fairly broad term that encompasses games featuring a variety of story genres. The gameplay in these games is fairly static—they feature still or minimally animated images of interior or exterior spaces embedded with small, clickable objects and regions. The act of exploring these spaces, therefore, is a trial-and-error of clicks and WASD (or equivalent) movement. In some ways, these games are similar to hypertexts, and could be considered to be image-centric hypertext hybrids.

In the mid-90s, as the era of the 2D *adventure games* began to die out in favor of new 3D titles, so too did my interest in their point-and-click spaces begin to wane. However, the *Monkey Island* games were not my only forays into digital island games.⁹ Concurrent with my fascination with physical Lego bricks, I also had a great affinity for Lego software. Not only did this extend to Lego-specific design software,¹⁰ I also played a number of Lego-based video games. Released long before the torrent of franchise-specific Lego titles (e.g. *Lego Harry Potter* or *Lego Star Wars* games, to name two of many), the company published *Lego Island 1* (1997) and *Lego Island 2*:

⁹Setting a game on an island is a clever solution to the common problem of environment boundaries when building digital spaces. Often developers are faced with a choice: either set their story in a setting with natural boundaries (e.g. a cavern, a ravine, or some other walled geologic structure), indoors (interior walls) or put up invisible barriers that prohibit exploration beyond a certain point (this can sometimes take a diegetic solution—i.e. “you can’t go that way!”—but more often than not manifests as “invisible” walls in an exterior landscape. An easier solution is to just plonk the gameworld on an island.

These island worlds have an illustrious history in the extraordinarily influential *Myst* (1993, and later “*Myst*-like” exploration games). Not all of these games are as serious as the original *Myst*, but they all work with the island as packaged gameworld in its totality. For a more recent example, see Jonathan Blow's *The Witness* (2016).

¹⁰e.g. the Lego stop-motion animation tools, or the first generation Mindstorms set with its digital RCX bricks. LEGO, “LEGO”; Bumgardner, “The Origins of Mindstorms.”

The Brickster's Revenge (2001). Later, my mother, herself a fan of puzzle games¹¹, purchased a number of these “*Myst*-like” games, notably *Qin: Tomb of the Middle Kingdom* (1996). *Qin* is a remarkably difficult game set in Lishan, in which the player solves a series of puzzles to progress through the tomb of Qin Shi Huangdi.

Despite my frustration with the challenges of *Qin*, it inspired me to seek out other games focused on history and fantasy. My father introduced me to a number of historical titles, and he and I frequently played real-time strategy (RTS) games, including Sierra/Impressions Games' *Pharoah* (1999) and *Cleopatra* (2000), Microsoft/Ensemble's *Age of Empires II: The Age of Kings* (1999), Firefly's *Stronghold* (2001), and *Stronghold: Crusader* (2002).

We also played a variety of fantasy role-playing games (RPGs), of which the *Might and Magic* series (specifically the seventh title in the series, *For Blood and Honor*) is most memorable. My brother and I each had our own personal adventures in the *Pokémon* series of games on the GameBoy Color. Embroiled in a constant fight for the the N64 (and later the GameCube) controller, we played the *Legend of Zelda* series religiously.

On my own, I became interested in tools that let me build virtual worlds. Maxis' “Software Toys” (*Sim City 2000*, 1993, and *The Sims*, 2000, along with its follow-ups and expansion packs) were early hits, but my absolute favorite title was of a gentler ilk: the town simulation game *Animal Crossing* (Nintendo, 2002). A Westernized release of the Japanese title “どうぶつの森” (*Dōbutsu no Mori*, 2001), this game offers a world of real-time exploration, featuring furniture design, friendship, fishing (and mortgage payments).¹²

The strategies of digital homemaking that I learned in *Animal Crossing* bled into my love of massively multiplayer online games (MMOs). My first foray into the MMO was with the online game forum *Neopets*. Early versions of the site featured a variety of gamespaces linked together with an extensive mythology (“the world

¹¹She is particularly fond of spatial, room-based puzzle games.

¹²Bogost, “Values and Aspirations,” loc. 3199.

of Neopia”),¹³ within which users interacted much like a social media platform.¹⁴ From there, I moved on to the somewhat odd advergimes *Coke Music* (2002, sometimes called “Coke Studios”), *Virtual Magic Kingdom* (VMK, 2005), and *Toontown Online* (2003). In *Coke Music*, vouchers from real-world CocaCola bottles could be redeemed for in-game currency (known as *decibels*), then put towards tricking out a digital “studio” with Coke-branded digital furniture. Disney’s VMK allowed players to explore digital versions of the real-world theme park’s “Magic Kingdoms,” and created embedded crossover games to encourage players to visit the brickspace parks. *Toontown* was a similar kid-friendly, 3D, subscription-based RPG (essentially a child’s cartoon version of *Second Life* or *World of Warcraft*). Beyond the interior design/personalization elements of these games, the primary mode of gameplay was social—each was essentially a digital chatroom.

Both *Coke Music* and VMK were built by Sulake Inc. on the framework of their isometric chatgame *Habbo Hotel* (2000).¹⁵ *Habbo* (and each of its region-specific spin-offs) featured much cleaner pixel graphics than its advergence peers. It also allowed users to buy and sell virtual furniture for use in the creation of digital rooms. Beyond simple spaces for socialization, users were encouraged to appropriate and domesticate¹⁶ the digital furniture (“furni”) in unique and interesting ways. Users within the community crafted a wide variety of games, mazes, and other spaces (everything from competitive events to rollercoasters) using the standard chairs and cabinetry available in the Habbo Catalogue. By playing the game, one could collect rarer and rarer furni items through purchase and in-game activity. However, since the Hotel featured a fairly simple virtual economy, it was also subject to virtual scammers—moderators frequently shut down elaborate furni-trade Ponzi schemes.¹⁷ To this day, the platform remains a popular online chatsite worldwide.¹⁸

¹³Neopets, “Neopedia.”

¹⁴Neopets was where I first learned how to write HTML; I needed to code in order to trick out my pet’s homepage with sweet sparkly GIFs and embedded MIDIs.

¹⁵Kuorikoski, “Industrial Revolution, 2005-2007.”, p. 128

¹⁶as per Sørensen, “Domestication.”

¹⁷As per Castronova, *Synthetic Worlds* and his exploration of digital economies.

¹⁸There are currently 9 active “Hotels” worldwide. In addition to the English-language hotel, there are also region-specific sites in Brazil, Finland, France, Germany, Italy, Spain,

While *Habbo* was certainly a beloved virtual space in the mid-2000s, it was by no means my only one. I also frequented the forum-game *Gaia Online*, which centered around fan cultures for other media (TV, movies, etc.)¹⁹, and the combat-focused MMORPGs (massively multiplayer online role playing games) *Flyff* (2005) and *Maplestory* (2006).

My interest in console games and gameplay waned during the years when I played these web-based MMOs, but it returned with a vengeance after my friend lent me her copy of *Kingdom Hearts 2* (2006, an odd pastiche game that blends characters from the Square Enix *Final Fantasy* series with the worlds of beloved Disney franchises). The *Kingdom Hearts* series brought me firmly back into the “world” of gaming (and to game-specific internet fora), where I was exposed to scores of virtual worlds of all shapes and sizes. From Capcom’s *Ace Attorney* series²⁰ to the consumer version of Konami’s *Dance Dance Revolution*²¹, and from the dark²² *Bioshock* (2007) to the comedic *Team Fortress 2* (2007), games reestablished a place in life as a centerpiece of social practice and of world exploration.

While typically featuring prominently on the games market and favored by industry reps, big-budget, violent first-person shooter (FPS) titles are often the least interesting example of games industry, of games culture and (most of all) of game worlds. To put it in terms of film, focusing analysis solely on shooter games is as absurd

the Netherlands and Turkey. In the game’s long history, there were at one point a vast assortment of country-specific hotels, each featuring the architectural language of the host country: e.g. *Habbo* Japan referenced the modern billboard buildings of central Tokyo, while *Habbo* UK looked a little bit like a modern Big Ben. For the complete collection, please see the *Habbo* Wiki at <http://habbo.wikia.com/>.

¹⁹Tangentially, anyone interested in the economies of these virtual spaces should check out reddit user Alexius08’s thorough exploration of hyperinflation in the *Gaia Online* marketplace (see Alexius08, “A Case of Hyperinflation in a Virtual Economy R/Truegaming.”). While others have explored this topic fairly broadly (e.g. Castronova, “The Price of Bodies.”; Castronova, *Synthetic Worlds*), we are seeing more and more instances of massive inflation as these digital economies age.

²⁰A series of visual-novel style legal games. Gameplay involves searching crime scenes for clues and defending clients in court.

²¹My friends and I would set up the flimsy plastic game mats in our living room and stomp around on the carpet.

²²And somewhat ham-handedly political, bless it...

as defining all cinema by its most bombastic blockbusters. We can differentiate between *Metropolis* (1927) and *Mad Max* (1979), and we can afford the same respect for games.²³ Today, in the wake of the “gamergate”²⁴ fallout and in a tense and combative political landscape, the unselfconscious bravado of these blockbuster game worlds seems more and more detached and stagnant. Instead, I find myself once again appreciating smaller games with worlds that emphasize authentic spaces, games that focus on gentle and heartfelt stories: *Undertale* (2015), *Stardew Valley* (2016), *Firewatch* (2016), and various small Twine games.²⁵ Despite turmoil, the renaissance of the game industry is occurring through these grassroots titles built by independent developers and small studios.

One other caveat in this discussion of play practices: games industry critics frequently fall into the trap of focusing on technological improvement over other merits of gameplay. This has led to a sub-culture of gamers who are focused on hardware specs and pixel-perfect, 60fps gameplay with little regard for the worlds within. The strategies for developing these “optimized game worlds” are interesting from a technical standpoint, but are not the focus of this study; this is not an exploration into media hardware or software optimization. In order to sidestep this trap altogether, I will later unpack the spatial processes at play in the tabletop RPG game *Dungeons & Dragons*. *Dungeons* is a game that requires only one piece of cutting-edge tech: the 24th century BCE invention, dice.²⁶ Games, regardless of media or format, afford us the opportunity to create and explore a multiverse of rich storyworlds; within those rich worlds are parallels to the same spatial logics that define physical space.

²³Although, as a comedic aside, there was a long-running trend in serious games journalism to try to pinpoint a “*Citizen Kane* of games,” as documented on the tumblr blog <http://thecitizenkaneofvideogames.tumblr.com>. The phrase was overused and mocked to the point that has now become an in-joke within the gaming community.

²⁴This history is far too recent for me to feel entirely comfortable offering a more thorough timeline, but suffice it to say that the *gamergate* “movement” was a poorly-disguised hate campaign that used aggressive tactics of internet harassment to target women and minorities in gamespaces. For a more thorough exploration into this history, I direct the reader to Matt Lees’s 2016 piece in *The Guardian*, “What Gamergate Should Have Taught Us About the ‘Alt-Right’”.

²⁵Kopas, *Videogames for Humans*.

²⁶Carlisle, *Encyclopedia of Play*, “Dice”.

I include this overview of my history with games so as to reinforce a few key presumptions that frame the remainder analysis: (1) the process of playing a game is an activity that educates, but the ultimate goal of those who voluntarily play games is not to “be educated,” (2) not all games (indeed, only a small subset of all games) are the heavily-marketed, senselessly violent, first-person shooter titles we so often associate with the term “videogames”²⁷ and (3) that games can be (and indeed, often are) just as social as any other activity. From here on, when I refer to “videogames,” this is the position I am starting from.

In defense of digital game spaces

As I have already described games (and, thus, game spaces), are certainly not a new phenomenon in human culture. However, games and play culture have been fundamentally reborn in the medium of the videogame (cf. prior discussion of Jovanovic). As a whole, digital games allow players an immediate connection to an infinite number of imaginary worlds, replete with a rich variety of settings and stories. In contrast to the photograph or the film, the construction of a videogame environment is a holistic process of spatial design, much more akin to the practice of modern digital architectural modeling than to that of cinematic or theatrical set design. In addition, the various modes of user/gameplay interaction allow for the development of nondiegetic gameplay elements (heads-up displays, or HUDs, for example), that stand in contrast to the standard diegetic modes available to more traditional linear media.²⁸

As Galloway writes in his comparison of the POV/subjective shot in film to the modern FPS, “game design explicitly requires the construction of a complete space in advance that is exhaustively explorable without montage.”²⁹ There is obviously a

²⁷To be clear, I’m not explicitly calling for inclusion of the term “casual game,” which is itself fraught with referential pitfalls. However, the fact remains that there are a lot more people playing games than think of themselves as “gamers,” as games critic Leigh Alexander alludes Alexander, “’Gamers’ Don’t Have to Be Your Audience. ’Gamers’ Are over.”. Additionally, cf. Entertainment Software Association, “Esential Facts.”

²⁸Galloway, *Gaming*.

²⁹Ibid., 64.

great deal of overlap in these techniques and strategies of spatial design, regardless of their eventual material form. Indeed, even the tools that designers use to plan and develop videogame spaces often overlap with those of built architecture. This can, as Bogost describes, be in no small part attributed to the function and history of games as an industrial art. The construction of a work of contemporary architecture uses many of the same digital tools (3D modeling software, rendering engines, etc.) that game developers use to create their games.³⁰

With regards to architecture and games specifically, this thesis builds off of two key assumptions: first, games are spatial³¹, and second, the process of creating a gamespace is a playful and exploratory act of digital architecture. Assuming gamespaces are architectural artifacts affords us the opportunity to explore the myriad ways in which these digital architectures are modified, repurposed, and rebuilt. Unlike a throwaway image, the “used props” of still-frame architectural photographs and other fungible forms of architectural media,³² the gamespace is a place of active spatial dialogue between designer and end-user. Gamespaces are inhabited, games are played, and thus, the spaces have a use *beyond* the image. Gamespaces are also active and configurable, and thus they are active props for the production of rich narratives and meaningful experiences. Ultimately, these are the characteristics of gamespace that I draw on for the remainder of this analysis.

Methodology and unit analysis

I draw my methodology primarily from the work of Ian Bogost. In his *Unit Operations: An Approach to Videogame Criticism*, Bogost outlines a strategy for criti-

³⁰The actual process of creating a large game title is as financially limiting as, say, building a building or making a blockbuster movie. However, the independent game development scene is constantly in a collaborative process of finding (or coding) cost-effective development pipelines that eschew the expensive software licenses required for large-scale game development. In this way, once again, game development is quite similar to architecture, where small firms often have to be very selective about which professional software packages they purchase (and even then often can only afford limited seats). Bogost, *Unit Operations*

³¹As established by Murray, *Hamlet on the Holodeck*.

³²See Colomina, “Media As Modern Architecture.”

cal analysis based on a bottom-up attention to the interactions between individual *units*³³. This stands in opposition to standard ontological analyses which look to the overall structure of the *system*.³⁴ Bogost traces an extraordinarily thorough lineage of his methodology of *unit analysis*, looking not just to modern complex network theory, but also to its foundations in philosophy, computing, object technology, and media theory.

Building from his work in *Unit Operations*, Bogost's *Alien Phenomenology* develops on this notion of the fungible unit by comparison with the modern philosophical dialogue branded "speculative realism" (SR).³⁵ SR, a term used to describe the collective works of Quentin Meillassoux, Graham Harman, Ray Brassier and Ian Hamilton Grant, is challenging to define on its own; as Bogost describes, their primary overlap is simply their rejection of the Kantian correlationist discourse of the past century of Continental Philosophy.

With specific reference to Harman's "object-oriented philosophy," he lays out an "object-oriented ontology" (abbreviated simply as "OOO"). Central to this philosophical concept is a direct challenge of hierarchical correlationist ontologies, in which human beings take precedence over all other things. Traditional paradigms of scientific naturalism and social relativism both fall into this trap: they take an anthropocentric approach to discovery by referencing human scientific progress and human cultural production, respectively.³⁶

In contrast, referencing Alan Weisman's evocative thought experiment, *The World Without Us*, Bogost states, "the object-oriented position holds that we do not have to wait for the rapturous disappearance of humanity to attend to plastic and lumber and steel."³⁷ By taking a human-centric approach to ontological analysis, we lose

³³Bogost defines the unit as "a multiplicity (following Badiou) which is configured into a whole for the purposes of critique" Bogost, *Unit Operations*, 12.

³⁴"System operations are thus totalizing structures that seek to explicate a phenomenon, behavior or state in its entirety" *ibid.*, 6

³⁵Bogost, *Alien Phenomenology*.

³⁶*Ibid.*, 13.

³⁷*Ibid.*, 8.

the ability to see meaningful relations between non-human entities. Moreover, the “object” in question need not be a physical thing. Following Levi Bryant’s “flat ontology”³⁸, Bogost states:

“corporeal and incorporeal entities count, whether they be material objects, abstractions, objects of intention, or anything else whatsoever—quarks, Harry Potter, keynote speeches, single-malt scotch, Land Rovers, lychee fruit, love affairs, dereferenced pointers, Mike “The Situation” Sorrentino, bozons, horticulturists, Mozambique, Super Mario Bros., not one is “more real” than any other.” (p. 21)

Once again, the ultimate challenge that this philosophy underscores is the need to avoid the pitfalls associated with “systems operational” thinking as such. Designing top-down, closed systems (especially those occurring on a large scale) is nigh impossible. “A flat ontology of computation (or anything else),” Bogost writes, “must be specific and open-ended, so as to make it less likely to fall into the trap of system operational overdetermination.”³⁹ The foundation for the SR critique (and, thus Bogost’s analysis) draws heavily from Bruno Latour’s actor-network theory (ANT). Latour establishes a “metaphysics of objects,” wherein every component is both *actor* and *actant*.⁴⁰ However, Bogost critiques Latour’s ANT as being far more concerned with the relationships *between* objects rather than with the objects themselves. “All things equally exist,” he states, “yet they do not exist equally.”⁴¹

As described in chapter 1, one way to explore these flat ontologies is through playful litany, which emphasizes incongruities and absurdities. This practice directly references past explorations into the nature and organization of physical objects *vis-à-vis* their architectural context, but it need not necessarily occur within the built environment. In *Alien Phenomenology*, Bogost uses code to conduct an exercise similar to the Walmart adventure referenced previously. For this project, his program

³⁸A term which Bryant, in turn, borrowed from Manuel DeLanda.

³⁹Ibid., 17.

⁴⁰Harman, “Bruno Latour and the Politics of Nature”; Harman, “The Importance of Bruno Latour for Philosophy.”

⁴¹Bogost, *Alien Phenomenology*, 11.

collects a random assortment of names, places, and objects with Wikipedia's API and concatenates them to generate what he dubs "Latour Litanies," or "bestiaries of things"⁴². Everything is equal in the eyes of the "Litanizer," which establishes a simple, non-hierarchical process of comparison.

Bogost continues on to describe strategies for conducting similar visual ontological experiments through what he terms an *ontography*: a methodology that exposes the visual relationships between objects as such.⁴³ The *ontography* expands this object-focused analysis beyond the constraints of real space to include images, interactions, and ideas. Bogost points to commonalities between the *ontograph* and technical drawings like exploded axonometric diagrams and cutaway sections; both methods of visual documentation that highlight a new way of looking at objects in terms of their relationships. In general, standard architectural drawings approach this object-focused awareness. As a more conceptual example, he also highlights the playful *ontographic* strategies implied by François Blanciak's *Siteless* project.⁴⁴

In his critique of the role of the artist in society, Nicholas Bourriaud describes the role of the artist as a playful actor who performs in opposition to the expectations of the system. "Artistic activity is a game," he writes, and later continues that the "artist's artwork thus acquires the status of an ensemble of units to be reactivated by the beholder-manipulator"⁴⁵ He, too, is critical of traditional assumptions of anthropocentrism in art:

The artistic practice thus resides in the invention of relations between consciousness. Each particular artwork is a proposal to live in a shared world, and the work of every artist is a bundle of relations with the world, giving rise to other relations, and so on and so forth, ad infinitum.⁴⁶

⁴²The original Latour Litanizer is available from Bogost's blog, "Latour Litanizer.". See also Bogost, *Alien Phenomenology* p. 55-59.

⁴³This practice is not unlike Smithsonian's photographic excursion to New Jersey Holt-Smithson Foundation, "Monuments of Passaic."

⁴⁴Blanciak, *Siteless*; Bogost, *Alien Phenomenology*, 49-52.

⁴⁵Bourriaud, *Relational Aesthetics*, 11, 19.

⁴⁶*Ibid.*, 22.

As Bourriaud describes, the production of art is an infinite (and porous) dialogue, in which every additional piece is, in some ways, discursively transformative. Regardless of medium, these transactional transformations reverberate through our culture.⁴⁷

Ultimately, I introduce these strategies for ontological analysis so as to establish that the composition of our surroundings is fundamentally equal—assigning anthropomorphic values to our environmental context does little to help us understand its underlying relationships; it is, at best, arbitrary and, at worst, deeply limiting. To this point, Bogost proposes a new, practical philosophy undertaken through carpentry, i.e. “the construction of artifacts that illustrate the perspective of objects,”⁴⁸ or similarly a practice that “tries to replicate the unit operation of another’s experience.”⁴⁹ This pragmatic approach to philosophy builds off of both Harman’s “carpentry of things” and Crawford’s “Crawford⁵⁰”. In essence, I am proposing is leveraging this “build it to understand it” model to the production of architectural space through the play, a unit operation which I term “**playful worldbuilding**.”

Approaches to videogame critique, as Bogost hints, often take a *systems operational* approach, looking to define an ontological core from which to define and sort all games. Categorizing all possible game spaces is an impossible endeavor, and one that would ultimately prove to be limiting rather than elucidating. While some past explorations have attempted to similarly chart out a definitive framework for architecture in games (i.e. a *ludic* architecture), the end result is often reductive or restrictive.⁵¹ There is little evidence to support the notion that such a taxonomy of game spaces is necessary (or even possible). Instead, I analyze a select group of games through the unit operation of playful worldbuilding; my analysis looks to the ways in which games can teach us about our connections to our architectural surroundings and to the world as a whole.

⁴⁷Ibid.

⁴⁸Bogost, “Latour Litanizer.”

⁴⁹Bogost, *Alien Phenomenology*, 100.

⁵⁰“Shop Class as Soulcraft.”

⁵¹Pace Walz, *Toward a Ludic Architecture. The Space of Play and Games*; Totten, *An Architectural Approach to Level Design*.

Spaces created through play, in contrast to spaces implied by non-interactive media, are unique in that they fundamentally reinforce internal relationships between the objects that they house. Again, building from Jovanovic, the subject-focused nature of game space changes our notion of traditional authorship. By recognizing the role of the end-user within the context of an ever-changing system, the subject is thus “aware of his own entanglement with other, non-human forms of agency and is willing to explore new configurations coming out of this flat, non-hierarchical relationship.”⁵² Making and exploring places of play is, therefore, a pragmatic application of oft-cited, broad philosophical concepts. This framing expands my critique not only outside of solely the realm of “video” games (*i.e.* digital games), but also allows for cross disciplinary critical practice. As I have stated above, the unit operation at play in this analysis is that of *worldbuilding*, an operation that I believe gets to the heart of this process of creative and playful architecture.

Defining worldbuilding

Worldbuilding, as I am defining it here, is the practice of shaping meaningful spatial narratives. In its totality, **worldbuilding is a unit operation** that integrates the playful act of spatial design with architecture’s ultimate capacity to generate diegetic meaning. It builds on theoretical foundations drawn from the the fields of literary analysis , game studies and fictionalism. My choice of the term “worldbuilding” is deliberate; it references not only the act of crafting synthetic worlds, it also makes direct and indirect references to literary theories that explore all fictional texts as spaces—as can be seen in studies of storyworlds⁵³ By establishing a narrative framework within which to define playful, fictional spaces, I open the dialogue up to a critique of architecture as a text—as constructed spaces within our collective fictions. Thus, it is possible to explore the production of architecture overall as as meaningful and collaborative development of shared fictions.

⁵²Jovanovic, “Fictions,” 33.

⁵³Following Herman, “Storyworld”; Herman, *Storytelling*.

Worldbuilding in literature and narrative

In the field of literature, a storyworld is a narrative tapestry of people, places and events woven together to reveal immersive and engaging story content⁵⁴. In *Storytelling and the Sciences of the mind*, theorist David Herman introduces the field narratology by way of narrative “worldmaking,” in which he defines the narrative as a system “of verbal or visual cues prompting their readers to *spatialize* storyworlds into evolving configurations of participants, objects and places.”⁵⁵ Marie-Laure Ryan expands on this concept in her overview of possible worlds theory, a framework that explores the meaning behind divergent fictional worlds *vis-à-vis* the real world.⁵⁶ “Fictional worlds,” she describes, “are a lived imaginative experience”⁵⁷.

In *Architecture et Narrativité*, French philosopher Paul Ricoeur describes the spatial processes of architecture as a configurative act similar to an author’s development of a narrative. He writes:

This “configuration” of time in the literary narrative is a good guide to interpreting the “configuration” of space in an architectural project. Much more than a simple parallelism between two poetic acts, it is an exhibition of the temporal and narrative dimensions of the architectural project. On the horizon of this investigation, we find, as suggested above, the manifestation of a space-time through which there is an exchange of narrative and architectural values.⁵⁸

For Ricoeur, both of these configurative operations create a “present of the future,”

⁵⁴Herman, “Storyworld”; Herman, “The Third Element.”

⁵⁵Herman, “Spatialization,” emphasis in original.

⁵⁶Ryan, *Possible Worlds, Artificial Intelligence*; Ryan, “Possible Worlds.”

⁵⁷Ryan, “Possible Worlds.”

⁵⁸Original text: “Cette « configuration » du temps par le récit littéraire est un bon guide pour interpréter la « configuration » de l’espace par le projet architectural. Bien plus qu’un simple parallélisme entre deux actes poétiques, il s’agit d’une exhibition de la dimension temporelle et narrative du projet architectural. À l’horizon de cette investigation, on trouve, comme on l’a suggéré plus haut, la manifestation d’un espace-temps dans lequel s’échangent les valeurs narratives et architecturales.”

Ricoeur, “Architecture et Narrativité,” 9. Translation by author.

an alternate reality in which one can craft meaningful places and stories.⁵⁹ Moreover, the construction of narrative is a process through which one “construes significant wholes out of scattered events,”⁶⁰ and in so doing is able to undergo a continual construction and reconstruction of meaning and identity.⁶¹ In *Utopias and Architecture*, Coleman makes the case that “architectural projects are a kind of fiction comparable to utopias,” and also that a building’s fictional underpinnings are responsible for both its ability to endure as architecture and for its ability to influence the activities that it ultimately houses.⁶² Following both Ricoeur and Coleman, Ufuk Ersoy further explores this strong link between literature and architecture; at all stages of the design process, he argues, “architecture represents a kind of fiction, and buildings stand as a possible reality so long as their imaginary potential persists, even once they are inhabited.”⁶³ Furthermore, as Coeckelbergh and Reijers explore, Ricoeur’s literary theories are applicable to narratives outside of literary discourse.⁶⁴ They outline a hermeneutic framework through which to analyze “narrative technologies;” per their analysis, videogames are active narrative technologies that function as configurative, engaging, spatiotemporal narrative systems.

Digital game studies has a significant (if contentious) relationship with literary theory. In his profoundly influential *Cybertext*, Espen Aarseth explores the connection between new media technology and what he terms “ergodic literature,” i.e. works where “nontrivial effort is required to allow the reader to traverse the text.”⁶⁵ Per Aarseth’s analysis, ergodic literature need not be hypertextual *per se*.⁶⁶ As one particularly interesting example, Aarseth cites is the ergodic nature of the *I Ching* (112-770 BCE), an early system of 64 reconfigurable text symbols that inspired GW

⁵⁹Ricoeur, *Time and Narrative*. as cited in Ersoy, “To See Daydreams.”

⁶⁰Ricoeur, “Narrative Time,” 178.

⁶¹Dowling, *Ricoeur on Time and Narrative*; Meretoja, “Narrative and Human Existence.”

⁶²Coleman, “Real Fictions,” 46.

⁶³Ersoy, “To See Daydreams,” 107.

⁶⁴Coeckelbergh and Reijers, “Narrative Technologies.”

⁶⁵Aarseth, *Cybertext*, 1.

⁶⁶Ergodic literature need not even be game-based, although he does mention Crowther and Woods’ 1976 interactive fiction title *Adventure* and Bartle and Trubshaw’s 1978 *MUD1*.

von Leibniz's binary mathematics.⁶⁷ He also references the electronic text of Jenny Holzer's installations,⁶⁸ e.g. her *Truism* series (1982), *Survival* series (1986), along with a number of other large installations (e.g. her *Under a Rock*, 1986). Each uses spectacular boards, LED signs, or other large format displays to project concise, powerful messages on repeat.⁶⁹ For Aarseth, the analytic process of "textonomy" is one way to interpret these artifacts as ergodic texts.⁷⁰

While his analysis is not limited to early hypertexts, as Montfort explores in *Twisty Little Passages*, game studies's roots are often traced back to the hypertext.⁷¹ Similarly, literary critic and digital media scholar Janet Murray argues that the transformation that occurs within digital texts and videogames allows for a totally new type of authorship, one which occurs based on (and in anticipation of) actions of the interactor.⁷² Building from this foundation, I too expand the notion of narrative to include not only literary fictions, but also the constructed, digital architectures in videogame universes. Similar to the sprawling settings of literary worlds, these synthetic game worlds offer us a multitude of potential futures through which to explore the configurative process of worldbuilding.

Drawing "the magic circle": worldbuilding in game studies

The easiest place to introduce the concept of "game spaces" is an oft-referenced theory in ludology: namely that of the "magic circle." This theoretical demarcation describes a porous, amorphous construct through which we can integrate serious critiques of and within spaces of play. First coined by play philosopher Johan Huizinga in his 1949 book *Homo Ludens*, the term is loosely applicable to all spaces in which games and play occur. Thus, a "magic circle" is not only a literal presence in physical

⁶⁷Ibid.

⁶⁸He specifically references a piece titled *I Am Awake at the Place Where Women Die* (1993), however Holzer's text art installations extend throughout her body of work.

⁶⁹Holzer, *Truism Series*; Holzer, *Mixed Messages*, and others.

⁷⁰Aarseth, *Cybertext*.

⁷¹Montfort, *Twisty Little Passages*.

⁷²Murray, *Hamlet on the Holodeck*, ch. "The Cyberbard and the Multiform Plot," p. 185-213.

space (see, for example, a baseball pitch or a football stadium), but also encompasses imagined spaces and times of play (e.g. the “time out” in a child’s game is an act of “stepping out” of the magic circle). As Huizinga writes:

All play moves and has its being within a playground marked off beforehand either materially or ideally, deliberately or as a matter of course. Just as there is no formal difference between play and ritual, so the “consecrated spot” cannot be formally distinguished from the play-ground. The arena, the card table, the magic circle, the temple, the stage, the screen the tennis court, the court of justice, etc. are all in form and function play-grounds, i.e. forbidden spots, isolated, hedged round, hallowed, within which special rules obtain. All are temporary worlds within the ordinary world, dedicated to the performance of an act apart.⁷³

Zimmerman and Salen famously expanded this theory to include the world of digital videogames.⁷⁴ Murray builds a similar argument, drawing from the traditional “reader response” school of literary theory. “When we enter a fictional world,” she writes, “we do not merely ‘suspend’ a critical faculty; we also exercise a creative faculty. We do not suspend disbelief so much as we actively *create belief*.”⁷⁵

Countless theorists have attempted to define human behaviors within game spaces. Roger Caillois created a taxonomy of the human needs fulfilled through the act of play: *agon* (competition), *alea* (chance), *ilinx* (vertigo), and *mimesis* (mimicry).⁷⁶ For Mary Midgely, the role of gameplay is important insofar as it has a direct connection to everyday life and behaviors, but it does not necessarily involve fun or diversion. For example, she writes, “Russian roulette is a game, and death is an essential part of it.”⁷⁷ She continues on to describe the ways in which games ritualize conflict, and thus challenges the notion that play is arbitrary, trivial or unimpor-

⁷³Huizinga, *Homo Ludens*, c2016, p. 10.

⁷⁴Salen and Zimmerman, *Rules of Play*.

⁷⁵Murray, *Hamlet on the Holodeck*, 110, emphasis in original.

⁷⁶*Man, Play, and Games*.

⁷⁷Midgely, “The Game Game,” 237.

tant.⁷⁸ A number of narrative theorists have attempted to define this gameplay with regards to diegetic and non-diegetic spaces; for example, in *Storyplaying*, Sebastian Domsch describes the “storyworld,” as “a mental construct made by the player that is triggered by a number of forms the player encounters during, but often also before and after gameplay.”⁷⁹

Worldbuilding and fictionalism

In *Mimesis as Make Believe*, fictionalist philosopher Kendall Walton proposed that, in much the same way that childhood toys take on alternative meanings in play, representational art acts as a narrative prop in our lives. He introduces “prop theory,” which looks to the importance of toys, images, and play in our personal narratives.⁸⁰ Game developer Chris Bateman expands on this point, extending Walton’s analysis of play to include games a form of representational artwork. Bateman frames his analysis in response to a claim by the late, great film critic Roger Ebert, who wrote that games are not (and can never be) art by nature of the fact that they have a win-state.⁸¹ Referencing Walton’s prop theory, Bateman contests Ebert’s conclusion. He highlights the importance of play and imagination in art. For Bateman, all art is imaginative, and thus playful. “Seen from the appropriate perspective,” he writes “all art is a game.”⁸²

Building further from Walton’s assumptions of representations as props, we can also extend Castronova’s 2005 study of “synthetic worlds” to explore gamespaces as props. Commenting specifically on the function of MMORPGs as synthetic environments, Castronova describes:

The screen turns into a window through which an alternative Earth, a synthetic world, can be seen. This other place (another planet, a historical domain, or any other plane of existence) can have mountains, stars, and

⁷⁸Ibid.

⁷⁹Domsch, *Storyplaying*.

⁸⁰Walton, *Mimesis as Make-Believe*; Nichols, *The Architecture of the Imagination*.

⁸¹Ebert, “Video Games Can Never Be Art,” a (now notorious) blog post.

⁸²Bateman, *Imaginary Games*, 113.

fire in it; it can have gravity, or no gravity, or reverse gravity; it might have trees and grass, but also chickens and dragons, or chickenheaded dragons or dragon-headed chickens; it might have houses and taverns and castles, or spaceships, or tiki bars; and it might have people”.⁸³

Architectural experience is poised at the intersection of these theories: Colomina’s interpretation of buildings as a contemporary *proskenion* (an architecture of theaters/sets)⁸⁴ establishes constructed space as backdrop for the day-to-day narratives in both our analog and digital lives.

Games as narrative fictions

It is clear that worldbuilding has ties to literary narrative, as is apparent in its role in digital games and digital spaces. By their very nature, however, Aarseth argues that these texts challenge the traditional structural and spatial assumptions of literary narratology. “The cybertext reader *is* a player, a gambler; the cybertext *is* a game-world or world-game; it *is* possible to explore, get lost and discover secret paths in these texts, not metaphorically, but through the topological structures of the textual machinery.”⁸⁵ Murray expands on this point in her analysis of the nature of digital environments. Digital game spaces in particular, she writes, are interactive (procedural and participatory) and immersive (spatial and encyclopedic).⁸⁶ As such, they are rich with asynchronous narrative meaning.

Comparative media theorist Henry Jenkins describes game designers as “narrative architects.”⁸⁷ In his exploration of the narratives embedded in story worlds, Jenkins states, “a story is less a temporal structure than a body of information... the game world becomes a kind of information space, a memory palace.”⁸⁸ Building off of this analysis, film theorist Daniel Reynolds proposed a new subcategory of game story,

⁸³*Synthetic Worlds*, 31–33.

⁸⁴*Ibid.*, 42–43; Colomina, “Media As Modern Architecture.”

⁸⁵Aarseth, *Cybertext*, 4.

⁸⁶Murray, *Hamlet on the Holodeck*, 71.

⁸⁷Jenkins, “Game Design as Narrative Architecture.”

⁸⁸*Ibid.*, 126.

which he dubbed “epistolary architecture.”⁸⁹ Like Jenkins before him, Reynolds cites the role of environmental storytelling (and the act of movement through space) as fundamental components of the narrative in the games *Gone Home* (2013), *Dear Esther* (2012), and *Bientôt L’été* (2012). Drawing from the history of epistolary novels (novels in which the action is told through correspondence or documents rather than direct action and dialogue), he focuses specifically on games in which narrative is developed through messages (e.g. notes, letters, audio recordings) that are placed (or even hidden) throughout game space.

Introducing the explorations

A games industry overview

There exists a significant body of research looking at the effects of video games on players. These include both positive effects (values, learning outcomes, etc)⁹⁰ and negative impacts (violence, addiction, etc.)⁹¹. Notably, gameplay has been repeatedly linked to a variety of positive cognitive outcomes, specifically with regards to spatial cognition and wayfinding.⁹²

Clearly, play is serious business. Play is also seriously *good* business, and market shares of games have been steadily on the rise in recent years. According to industry association statistics, the US/Canadian hobby games market (traditional board games, card games, etc.) took in \$1.2 billion in 2015,⁹³ American consumers spent

⁸⁹“Letters and the Unseen Woman.”

⁹⁰E.g. Gagnon, “Videogames and Spatial Skills”; Creasey and Myers, “Video Games and Children” and more recent explorations by Barr, Noble, and Biddle, “Video Game Values.”; and Buelow, Okdie, and Cooper, “The Influence of Video Games on Executive Functions in College Students.”

⁹¹E.g. Sheese and Graziano, “Deciding to Defect”; Green and Seitz, “The Impacts of Video Games on Cognition (and How the Government Can Guide the Industry).”

⁹²Feng, Spence, and Pratt, “Playing an Action Video Game Reduces Gender Differences in Spatial Cognition”; Choi and Lane, “Impact of Visuospatial Characteristics of Video Games on Improvements in Cognitive Abilities”; Gozli, Bavelier, and Pratt, “The Effect of Action Video Game Playing on Sensorimotor Learning.”

⁹³Griepp, “Hobby Games Market Nearly \$1.2 Billion in 2015.”

\$23.5 billion on digital video games, hardware and accessories in 2015,⁹⁴ and the Toy Industry Association estimates that the US toy industry raked in \$24.7 billion in 2016.⁹⁵

Defining and analyzing games

Setting aside studies of “serious” cognitive games and the number of game units sold *per annum*, games are also important for the role they play in our personal fictions, narratives and mythologies. As previously outlined, I take the position that games are spatial,⁹⁶ operational⁹⁷ and imaginative.⁹⁸ I will explore these elements in greater detail in the proceeding case studies.

Game designers are acutely aware of the role of space, place and architecture in their work. At a macro level, the very basics of game design are essentially strategies of architecture, from both the ludological focus of architecting a *system* of play⁹⁹ and from the level design focus of building *spaces* of play. It is here that I feel I must offer background and clarification for those not aware of the videogame studies discourse: namely an overview of common approaches to videogame critique. Since the advent of the game, there has been an ever-present struggle to define the artifact: is a game a system of rules? Is it a collection the narratives generated by the operation of that system? Is it a single instance of play, or is it every possible instance?

As game worlds and game stories began to take on expanded forms, various techniques for interpreting games as artifacts took center stage. The generally recognized discourse saw a division between the idea of games-as-systems versus games-as-narratives. In retrospect, this has been termed the great “ludology vs. narratology” debate. While the discourse itself has already been picked to pieces in post-mortem analysis, its effects can still be felt reverberating through our current dialogue about

⁹⁴Entertainment Software Association, “Esestial Facts.”

⁹⁵Toy Industry Association, Inc., “Annual U.S. Sales Data.”

⁹⁶following Huizinga, Salen and Zimmerman

⁹⁷following Murray, Bogost, and Galloway

⁹⁸following Walton, Midgley, Caillois and Bateman

⁹⁹See Frasca, “Ludologists Love Stories, Too”; and Bogost, *Unit Operations*.

games. Unpacking this conflict is (in a way) tangential to my as it manifests within gamespaces, but it nevertheless stands as an important point of reference for in the overall history of the game studies discourse. Hopefully, it is a forgivable clarifies the language at use use when describing both actions of play and of play spaces.

Ludology/Narratology: a primer

The debate boiled down to this: Gonzalo Frasca, drawing from Espen Aarseth's¹⁰⁰ coined the term "ludology" to describe the ways in which a game's system of play could be just as meaningful as its more traditional narrative elements.¹⁰¹ A number of popular game designers and critics, already concerned that games critique focused too much on the "story" of a game and not about the act of *playing* it,¹⁰² misinterpreted the use of this term as a call-to-action against the act of *reading* a game through more traditional narratological lenses (e.g. critiquing story, plot, character, dialogue). Through the 90s until quite recently, the line between "game" and "story" was a serious subject of debate in game studies literature (and beyond).¹⁰³

While the schism was hotly debated across the literature and blogosphere, it was ultimately somewhat fruitless: recognizing the core differences between these two methods of critique is only occasionally useful.¹⁰⁴ As is to be expected of a medium that grew up in concert with information/communication technologies (read: the Internet forum and the comment box), more often than not, the academic dialogue

¹⁰⁰ *Cybertext*.

¹⁰¹ "Ludology and Narratology."

¹⁰² A concern frequently presented alongside worries that games were becoming too much like big-budget blockbuster films.

¹⁰³ Aarseth, *Cybertext*; Frasca, "Ludologists Love Stories, Too"; Juul, *Half-Real*, and others.

¹⁰⁴ Although the debate did provide us with the interesting (if flawed) concept of "ludonarrative dissonance" in gameplay, which remains an interesting study of dynamics between systems and narratives. The term refers to situations in which the gameplay or mechanics are at odds with the story that the game is telling (e.g. a story of disenfranchisement wherein the player character has superpowers, or a story of morality where one progresses via violent actions). It is just one example of the ways in which gameplay and narrative are inseparable, and thus differentiating between the two is unhelpful. cf. Hocking, "Ludonarrative Dissonance in Bioshock."

devolved into the heated, hyperbolic, and hopeless.¹⁰⁵ It is clear to anyone who has ever played a game that these two camps are not, in fact, distinct; game narratives often occur through nonlinear gameplay systems and game environments. Moreover, even if many games do not have traditional narrative arcs, ludic systems nonetheless have embedded rhetorical implications.¹⁰⁶ Murray offered a final, rational voice in this debate, critiquing the hardline approaches to ludology as both a methodology of “computer game formalism” and as a separate ideology of “game essentialism.” In her 2005 DiGRA keynote, she stated: “game studies, like any organized pursuit of knowledge, is not a zero-sum team contest, but a multi-dimensional, open-ended puzzle that we all are engaged in cooperatively solving.”¹⁰⁷

To identify the original source of the confusion, we need only look to the initial misinterpretations of the terms “ludology” and “narratology,” both of which were subsequently summarized and reduced almost to the point of self-parody.¹⁰⁸ Ludologists were accused of being “anti-narratology” as an excuse to absolve themselves from the responsibility of writing interesting plots and good dialogue. Narratologists, on the other hand, were accused of reducing games to linear stories, of corrupting games to the point of being “too much like movies,” and threatening to take the “fun”¹⁰⁹ out of games. As Bogost describes, this reductionist approach confuses “narratology,” the

¹⁰⁵In his 2001 article in *Game Studies*, “The Gaming Situation,” ludologist Markku Eskelinen remarks, “Outside academic theory people are usually excellent at making distinctions between narrative, drama and games. If I throw a ball at you I don’t expect you to drop it and wait until it starts telling stories” Eskelinen, “The Gaming Situation.”

Indeed, even in the published game studies anthology from which I previously referenced the Jenkins essay “Game Design as Narrative Architecture,” the counter-argument by Eskelinen (and Jenkins’ subsequent riposte) was sarcastic and contentious. See “From Markku Eskelinen’s Online Response” and “Jenkins Responds” in Wardrip-Fruin and Harrigan, *First Person*, 120–21.

¹⁰⁶Bogost, *Persuasive Games*.

¹⁰⁷Murray, “The Last Word on Ludology V Narratology in Game Studies.”

¹⁰⁸Frasca, “Ludologists Love Stories, Too.”

¹⁰⁹“Fun” is another contentious topic in the game studies discourse. In the long-running (and unresolved) ontological arguments about what makes a game a “game,” one proposed framework looked to the idea of enjoyment as a necessary component of games and of games studies. See Bond’s overview in *Introduction to Game Design, Prototyping, and Development*, “The Definition of Game”. While fun is obviously of some importance for some games, its subjectivity renders it difficult for use in many critical applications.

comprehensive study of various strategies of media narrative, for “narrativism.”¹¹⁰

In an attempt to bridge this division within the discourse, comparative media scholar Henry Jenkins proposed a new strategy for design and analysis of games: instead of looking at games as systems *or* as narratives, he explores how games act as systems *for* embedding and encoding narrative¹¹¹. Drawing from de Certeau¹¹² and Lefebvre,¹¹³ his investigation presents the notion that game players take on an active role in uncovering important story elements and, thus, in revealing “embedded narratives” in game spaces. This he contrasts against more traditional media (books, films, etc.) in which the author has a significant amount of control over how and when the reader learns about the story world.

One can imagine the game designer as developing two kinds of narratives—one relatively unstructured and controlled by the player as they explore the game space and unlock its secrets; the other restructured but embedded within the *mise-en-scène* awaiting discovery.¹¹⁴

Early in his exploration, Jenkins takes the position that “not all games tell stories.”¹¹⁵ While I understand his intention, in effect separating out “gamey” games (e.g. *Tetris*, 1984) from those with a distinct, traditional narrative structure (e.g. the *Uncharted* series 2007-16), I disagree with him in this regard. All games (regardless of complexity) have spatial implications, and all spaces tell stories. To that end, we can look to the role of worldbuilders and their spaces of play in terms of their ability to create fictional truths. Game makers are practitioners who use space to develop emergent narratives.

¹¹⁰*Unit Operations*, 68–71.

¹¹¹“Game Design as Narrative Architecture.”

¹¹²*The Practice of Everyday Life*.

¹¹³*The production of space*.

¹¹⁴“Game Design as Narrative Architecture,” 126.

¹¹⁵*Ibid.*, 119.

Defining play spaces

Game developers are acutely aware of the importance of spatial conditions in their designs—in fact, to be a game designer (even for simple tabletop games or board games) is to employ architecture with targeted intention. As Jenkins writes, “a prehistory of video and computer games might take us through the evolution of paper mazes or board games, both preoccupied with the design of spaces, even where they also provided some narrative context.”¹¹⁶ Seemingly straightforward games, as in common board games like checkers, chess, or backgammon, all incorporate some form of spatial pattern recognition. For example, chess is spatial—it involves definite patterns of movement (linear diagonal patterns, jumps, squares, etc.) and playing chess requires some understanding of spatial reasoning. Stepping away from the spatial *play*, of chess, we can similarly look to the spatial context in which the game takes place: e.g. “at a chess table” or “in the park,” magic circles mapped out by real-world boundaries.

Game designers have long had a history of carefully designing space in order to create meaning. The act of video game development carries with it an implicit understanding of many architectural techniques and strategies. Both 2D and 3D games often use spatial puzzles, from the simple (e.g. the gym puzzles in handheld *Pokémon* titles, 1996-present) to the complex (e.g. the space-bending puzzles of *Portal*, 2007). Architecture is used to tell stories.¹¹⁷ Spatial cues are used to encourage exploration, to tell stories, and often to great effect. In this regard, all video game developers are, to some degree or another, building space.

Who are the digital architects and spacemakers?

In much the same way that the architectural imaginings of starchitects are brought to fruition by an office of (often unnamed and uncredited) RAs, interns and other

¹¹⁶Ibid., 121.

¹¹⁷Ibid.; Reynolds, “Letters and the Unseen Woman.”

peons, the work of AAA studios¹¹⁸ and the titles of “big name” developers are often developed by hundreds of individuals at once. A video game, much like a work of architecture, is a huge undertaking. The degree to which these “big name” developers are able to exert authorial control is, therefore, quite dependent on the game, the studio, and the publisher. Even relatively small “indie” studios are forced to grapple with this problem, to varying effects (as a stellar example, one can look at the oeuvre of Jenova Chen and Santa Monica Studio/TGC¹¹⁹). Not all development happens in studios, however, as can be seen in the cases of independent developers like Jonathan Blow (*Braid* and *The Witness*), Toby Fox (*Undertale*) or Eric Barone (*Stardew Valley*).

I am certainly not discounting the importance of architecture in AAA titles. *Grand Theft Auto V* (*GTAV*) boasted an large, open-world map densely filled with buildings.¹²⁰ Some AAA titles have even been hailed as masterpieces of spatial narrative, using architectural motifs to greatly enhance their stories. One notable example is the *Bioshock* series (2007-2013). The first *Bioshock* game (2007) quite pointedly used Art Deco art and architecture to reinforce its vision of an underwater objectivist utopia gone awry. These same motifs continued into the second title, *Bioshock 2*, albeit with a narrative emphasis on collectivism set within its dystopian cityscape (2010). The third and most recent title in the series is *Bioshock: Infinite*. It drew on turn-of-the-century Americana (with deliberate references to the World’s Columbia Exposition of 1893¹²¹), and it uses the environment to present topics of racism and American exceptionalism. While the ultimate narrative success of these games is debated, their intentional use of architectural language is notable.¹²²

¹¹⁸A nebulous term used in the games industry and games journalism to denote “blockbuster” style development studios—i.e. multi-million dollar development shops with a large staff and intense production pipelines.

¹¹⁹Cf. Bogost, *How to Talk About Videogames*, “A Portrait of the Artist as a Game Studio: the aesthetic trajectory of thatgamecompany’s *fIow*, *Flower*, and *Journey*”.

¹²⁰Aguilar, “GTA 5 Map Compared to the Google Maps of Major Cities.”

As an aside, the *GTA* series also has a history of legal issues with regards to representing real buildings in its digital playspaces). cf. Stark, “Grand Theft Architecture.”

¹²¹Hsu, “How Scientific Racism Shaped Bioshock.”

¹²²Lizardi, “Bioshock.”

However, in contrast to the above AAA titles, there has long been a rhizomatic subculture of games and games developers thriving in the indie and small-developer games market. As more and more people use interactive media to tell their stories, these smaller games are beginning to experience a renaissance, of sorts. One need only look to the rapid growth of digital distribution platforms like Good Old Games (GOG), Humble Bundles, Itch.io, Steam Greenlight, and video game kick-starter culture to see evidence of this subcultural growth. These indie games often feature low-resolution (or at least non-photorealistic) graphics. Depending on the artistic skill of the developer, this may translate into an intentional design style—retro-looking, pixel art, or a unique design conceit—or simply reconfigure and reuse premade game design kit. *Hyper Light Drifter* (2016) leveraged the free Gamedev engine to employ a spectacularly beautiful pixel art landscape. On the flip side, when designers from other fields work to build games, the art style itself can take on an interesting and notable meaning; see, for example, the stealth game *Calvino Noir* (2015)¹²³ or the Escher-esque *Monument Valley* (2015). These games tend to have a clear voice¹²⁴, and often have a heartfelt stories with genuine messages that resonate with a wide audience.

This chapter looks specifically to gameworlds as case studies of meaningful designed spaces. It references both the functions they serve and the people who make them. Due to the low barrier to entry into hacking, making and breaking game spaces, there are a significant number of examples of “homebrew” game architecture: significant game spaces that were made of, by, and for players and users of these spaces. To an outsider unfamiliar with the games industry landscape, these independent titles would be easy to overlook. Therefore, in order to get a better understanding of worldbuilding as a *ludic act*, I take the position that the most interesting spatial experimentation takes place at this grassroots, independent development level. While many of these games are on the fringes of popular games culture (if they *can* even be considered “popular”), they nonetheless represent interesting and unique boundary

¹²³The game, set in the 1930s, was designed by a team of architects; its environment features section-cuts of European urban streets and buildings.

¹²⁴Cf. Chris Franklin’s in-depth exploration of Brendon Chung’s studio, *Blendo Games*.

explorations within the world of video games.

If spaces are architectural, then the act of designing a videogame space becomes an architectural act. The game designer is thus also an amateur architect. What can we learn from these “bedroom coders” and their techniques of spatial storytelling?

Core gameplay vs. peripheral gameplay

In *The Place of Play*, Lauwaert establishes a conceptual framework for analyzing the appropriation of game objects and game spaces. This framework draws a distinction between actions that are part of core gameplay (i.e. a gameplay system feature designed by the developer, or the established canon of that game world) and those that are part of the periphery (i.e. actions that are not intended by the developers, fan-generated content, spin-offs, etc.). The dialogue between these two “geographies of play” can be either centripetal or centrifugal, and they can either represent appropriation or configuration of system-specific units (see see figure 3.1). For example, a player can participate only in the established, core gameplay practices, but still perform a centrifugal appropriation of the core game world by writing peripheral narratives through derivative fanworks. Similarly, actions taken at the periphery can be appropriated and incorporated into core gameplay, as is often the case with the interplay between game modders and the developers of the original game content.¹²⁵

As Lauwaert explains, “when divergent player behavior becomes part of the core, the lines between player, consumer and producer become unclear.”¹²⁶ It is this notion of consumer-as-worldbuilder that I explore in the following mini-case studies. Following Lauwaert’s framework, these explorations will be split into two categories: games in which worldbuilding is a core component of gameplay and games in which worldbuilding is a peripheral component (or a meta-game).

¹²⁵Lauwaert, *The Place of Play*; Jenkins, *Convergence Culture*.

¹²⁶Lauwaert, *The Place of Play*, 19.

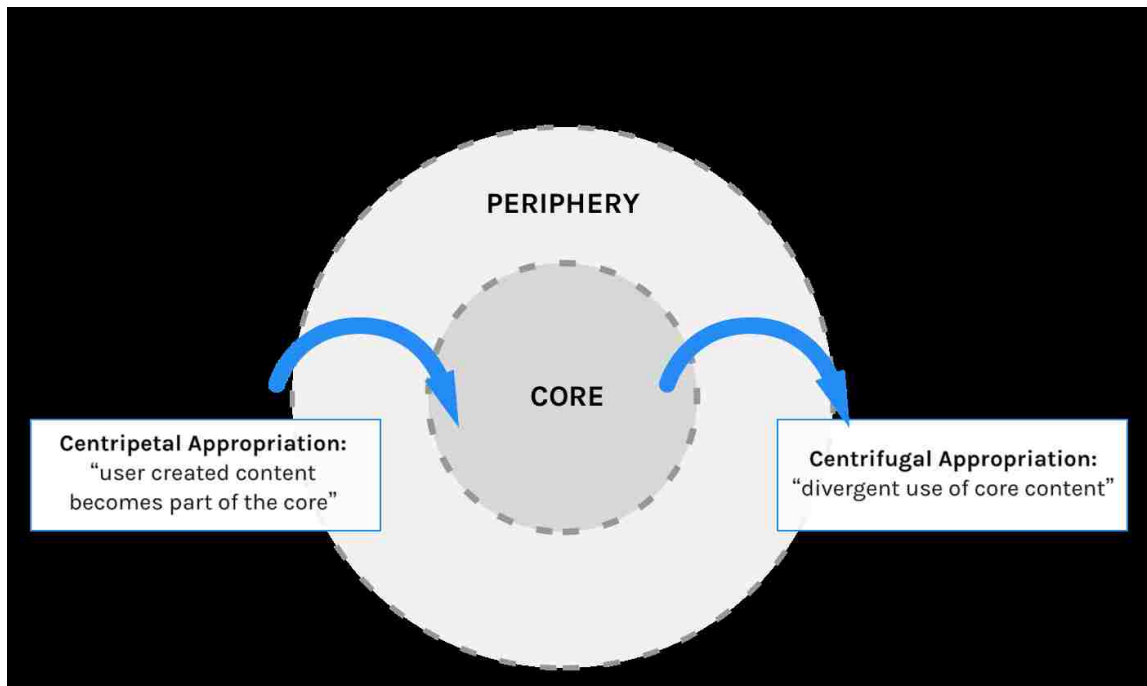


Figure 3.1: Diagram of Appropriative Gameplay. Adapted from Lauwaert, “Place of Play”. p. 17-19.

Exploration 1: worldbuilding as core gameplay

While traditional, big-budget video games often feature linear storylines (or, at the least, feature top-down, developer-led story content), a number of titles developed by independent developers and smaller studios leave the act of storytelling and worldbuilding to the players. These games are equal parts game and digital construction toy, and often build off the design strategies at play in gameplay systems like Maxis’ *The Sims* or *Sim City* (both described in detail in chapter 1). However, these titles are by no means the only such works that feature worldbuilding as a core gameplay element. In essence, by playing these games the way that they are meant to be played, players are participating in a process of worldbuilding.

Games genres which often feature worldbuilding as a core gameplay element include open-ended RPGs, sandbox-style building games, and simulation games. Some recent examples include, *Sleep is Death* (Rohrer 2010), and *Stardew Valley* (Barone 2016), very different games in which the player builds stories for themselves (and others)

using in game props and randomized scenarios.

Dungeons and Dragons: Interactive, imaginative worldbuilding

While my framework has thus far focused primarily on cybertexts and digital spaces at play, I begin by presenting one of the earlier and, arguably, most influential forms of spatial game narrative: the tabletop RPG. *Dungeons and Dragons* (The Wizard's Coast, original publication 1974) is by and large the best known example of this category of game; game developers from across studios cite it as having had a significant impact on their interest in pursuing game, narrative, and level design.¹²⁷ Not only is *Dungeons* the bedrock of the modern RPG, it both defined and ultimately epitomizes the unit operation of “worldbuilding” through play, as I have characterized it above.¹²⁸

The game works like this: the Dungeon Master (DM, alt. Game Master or GM), equipped with his trusty DM guide,¹²⁹ gathers a group of players (each with their Player Handbooks, PHBs¹³⁰) and an ungodly number of dice. The DM has pre-written key elements of a story campaign for the players, with locations, plot arcs, non-player characters, and important items.¹³¹ The players each bring their own character sheets,¹³² pre-rolled for stats and other character traits.

The game itself is a turn-based process of collaborative exploration, in which the player moves and then performs an action (which may or may not require the approval of the DM and/or a dice roll to check if that action was successful). Examples

¹²⁷For example, Bateman makes direct reference to *D&D* in *Imaginary Games*, as does BioWare writer Patrick Weeks Hines, “Patrick Weekes on Video Game Writing.”

¹²⁸Ewalt, *Of Dice and Men*; Witwer, *Empire of Imagination*.

¹²⁹E.g. Mearls et al., *Dungeon Master's Guide*.

¹³⁰Mearls and Crawford, *Dungeons & Dragons Player's Handbook*.

¹³¹For the faint of heart, the Wizard's Coast company also offers pre-written campaign books. DMs can reference or draw material from these in order to piece together their campaigns. Cf. Sernett et al., *Neverwinter Campaign Setting*

¹³²Within some parameters set out by the PHB, players are free/encouraged to write elaborate back stories for their characters—although in the interest of being a good sport, players are often encouraged a) not to be a lone wolf and b) not to obsess over stats.

might include characters attempting to perform a direct action (consuming an item, or sitting in a pub), to explore their surroundings, or to participate in an interaction with a non-player character (NPC). Additional rules and behaviors apply in combat scenarios, and are largely dependant upon a player character's traits and skills. As Bateman describes, the end result is a game that is akin to "improvisational theater."¹³³

While this explanation may make the game seem very strict and prescriptive, in reality the addition of uncertainty¹³⁴ is ultimately a huge benefit to both the DM and player; it helps with the production of meaningful gameplay experiences. Chance (primarily in the form of dice rolls) sets this and other tabletop games apart from simply being round-table exercises in imagination. Instead, the game becomes a framework through which to craft and explore a collective imaginary space, beholden only to the roll of the die and the whims of the DM.

To that end, the game of *Dungeons and Dragons* is a unit operational act of worldbuilding, and the game space is itself a process. Despite the performative element of collaboration within the RPG, the primary mode of gameplay is spatial; as Jenkins writes, "the Dungeon Master's activities start with designing the space—the dungeon—where the players' quest will take place."¹³⁵ Environmental storytelling is an essential feature of the roleplaying game. The DM is responsible for creating the framework of the game world, but it would be unrealistic to assume that she has imagined it down to the last twigs and stones. Instead, she creates an imaginary "framework" world, filled with the essentials: countries, towns, spaces, doors, objects, etc. that are essential to her campaign. The official DM Guide makes direct reference to the importance of this process of worldbuilding for the purposes of narrative creation.¹³⁶

The players, in turn, interact with this imaginary world, and are ultimately respon-

¹³³ Bateman, *Imaginary Games* p 56.

¹³⁴A historically important element of games of chance, cf. Carlisle, *Encyclopedia of Play*, sec. "Dice" and Costikyan, *Uncertainty in Games*.

¹³⁵Jenkins, "Game Design as Narrative Architecture," 113.

¹³⁶Mearls et al., *Dungeon Master's Guide*., "A World of Your Own".

sible for collaboratively discovering elements of key importance. At its most basic, this typically manifests itself in a search for objects of utility: a player character who is at a disadvantage in a bar fight might, for example, ask the DM if there are any bottles or instruments nearby to use as a makeshift weapon. However, this often takes the form of more direct worldbuilding when play is used as a tool to learn about their gamespace surroundings. A player exploring a dungeon could ask the DM about the composition of the stone, about the sound of her footsteps through a long corridor, about the surety of her footsteps as she walks across a wooden bridge. In this shared imagination, the world of the gamespace is constantly in the process of being made and remade by both the DM and the players.

In *Imaginary Games*, Bateman describes imagination as “a talent in varying supply.”¹³⁷ To aid in gameplay immersion, therefore, DMs and players will often develop their own gameplay and story pieces (for example, tokens, maps and other imagination aids). The degree to which the game is undertaken solely in the imagination of the players is at the behest of the DM. DMs can choose to make the game primarily imaginary (players in these campaigns bring only their dice and possibly a scratchpad for notes), or can build a number of imagination aids for the players. From creating custom player tokens to drawing out world-, city-, and dungeon-level maps or developing elaborate matte paintings of various environments, the DM chooses what information will help her players understand the intricacies of the game world. At present, this process is facilitated by a plethora of random map generators, map-making softwares, and other spatial tools to help DMs to develop their campaign scenarios (see figure 3.2)¹³⁸. Not only do these props serve to supplement the gameplay process, they also assist players who may have difficulty imagining the spatial scenarios described in the gameplay. “The easier something is to imagine,” writes Bateman, “the more people can participate.”¹³⁹

Traditionally, tabletop RPGs were just that: communal RPGs played around a phys-

¹³⁷Bateman, *Imaginary Games*, 97.

¹³⁸One example is the “Donjon; 5e Random Dungeon Generator.”

¹³⁹Bateman, *Imaginary Games*, 98.

ical table. They were spaces in which people met with friends,¹⁴⁰ but were, by necessity, limited to a magic circle defined by physical presence. As one might expect, however, today's tabletop RPGs have also spread to digital platforms. In addition to the above physical tokens, maps, and other facilitators described above, platforms like Roll20.net¹⁴¹ allow DMs to host games remotely (sometimes with strangers found through forums and online matching servers). Digital tabletop games also afford the DM the opportunity to embed even more tools to help players imagine the game world: in-game movement takes place on a digital canvas onto which the DM can spread maps, digital item tokens, background images, and other objects. These platforms also allow for multimedia embeds (for example, the DM can create and play background music or story-applicable sound effects).

Player interactions take on a different role in these spaces, as well; they often include digital dice rolls, automated character sheets (which pre-compute stats for rolls), digital character tokens to move around the game canvas, and other devices to streamline gameplay interactions. Although it could be argued that these gameplay environments are less personal, they certainly make the process of interfacing with the imaginary world much more streamlined. These games have thus become a new form of collaborative digital game space, which use digital platforms to create "homebrew" rulesets and play styles. Most of these digital tabletop platforms are not specific to any RPG in particular, allowing play groups to develop a style of gameplay that suits their needs.

As an interesting aside, the subcultures which surround tabletop gaming are also seeing a substantial rise in popularity in recent years.¹⁴² As games continue to take on a more prominent role in popular culture, so too are the fan spaces surrounding tabletop RPGs gaining new ground. From famous nerds (Chris Hardwick,¹⁴³ Wil

¹⁴⁰And *met* friends.

¹⁴¹"Roll20.Net."

¹⁴²Marnell, "Discover."

¹⁴³Tito, "The Nerdist's Force Grey."

Wheaton¹⁴⁴) to famous actors (Vin Diesel¹⁴⁵), more and more prominent figures are speaking publicly about the ways that tabletop games have changed their lives. These games are also increasing in popularity due to the rise of game-specific video streaming services such as YouTube Gaming, Twitch.tv, and others. Critical Role, a web series hosted by the web media group Geek and Sundry, broadcasts the regular, long-running *D&D* campaigns of DM Matthew Mercer and many of his fellow voice actors.¹⁴⁶ In addition, there is a burgeoning niche industry surrounding physical items to support tabletop gaming, including bespoke dice, bags and custom 3D-printed character/enemy tokens.¹⁴⁷

Digital procedural worldbuilding: collaboration and construction play in *Minecraft*

So far, this discussion has explored spacemaking practice in both construction toys and in videogames. As such, I would be remiss not to explore a recent phenomenon that has thoroughly overtaken both domains: *Minecraft*, the 2009 title released by Swedish developer Markus “Notch” Persson (founder of Mojang AB). *Minecraft* is a unique phenomenon the likes of which I can barely begin to cover in this thesis, however I will attempt to offer a broad survey of the spectacular subculture surrounding this game, particularly as it exemplifies the democratization of spatial design. *Minecraft*’s ubiquity across multiple domains of play makes it an interesting case study for the analysis of worldbuilding as educational practice.

Ultimately, the unit operation of worldbuilding is at *Minecraft*’s core, both through its gameplay (which consists of various forms of building) and its emergent narratives (developed entirely by players through meta-textual play practice). In a recent feature for *The New York Times Magazine*, Clive Thompson looked at the phenomenon of *Minecraft* through the historical lens of construction-play. Thompson references both Danish designer Carl Theodor Sorensen’s “junk playgrounds” and the history

¹⁴⁴Wheaton, “TableTop.”

¹⁴⁵Diesel wrote the forward to the 30 year *Dungeons* retrospective, *30 Years of Adventure*.

¹⁴⁶Mercer, “Critical Role.”

¹⁴⁷Shapeways Games, “Dice”; Hero Forge, “Custom Miniatures.”

of *sloyd* in European education. In a quoted interview with Philadelphia Museum of Art fellow Colin Fanning; Thompson also highlights the importance of wood and materiality in the game.¹⁴⁸ Fanning himself has explored *Minecraft* in great detail. In an essay written with Rebecca Mir, the authors traces a lineage of *Minecraft*'s playful practice by quoting one of the *Gläserne Kette* letters (see chapter 1 for more).¹⁴⁹ Specifically, Fanning and Mir reference pieces of a charmingly prophetic letter by Wenzel Hablik, which reads:

Children! What magnificent materials our earth still has as “material for our building games!”

Just think: We have rock! Metal and diamonds! And many beautiful sands! And water! Fire and air! We can blow—suck—hit—bore—lift—press—smelt—and soon we shall also be able to fly! We can live in the air!¹⁵⁰

The essence of *Minecraft*'s gameplay is essentially just as Hablik predicted: *Minecraft* is an open-ended, procedurally generated series of digital blocks made of different materials (from blocks of dirt and coal to blocks of diamond and lava) that can be broken apart and reconfigured. By the end of its alpha release period, the entire game was essentially an elaborate, multiplayer crafting system; it allowed players to mine resources from their surroundings and then transform them into useful in-game items (e.g. blocks of wood can be broken into sticks, which can then be combined with bricks of iron to create a shovel, with which one can collect blocks of dirt and so on).¹⁵¹ From punching trees to building diamond palaces, the player can do as they see fit; the entire universe is a reconfigurable set of digital blocks. Standard POV in *Minecraft* is entirely first person, but the player's hands appear as little blocky nubbins, not the stylized or photorealistic hands typical of other first-person titles.

Persson released *Minecraft* as an in-progress beta on the PC during an era when its

¹⁴⁸Thompson, “The *Minecraft* Generation.”

¹⁴⁹Fanning and Mir, “Teaching Tools.”

¹⁵⁰Translated in Whyte and Taut, *The Crystal Chain Letters*, 28.

¹⁵¹Redmond, “The Videogame Commons Remakes the Transnational Studio.”

blocky, indie-style graphics were charming and refreshingly unique. The game came of age amidst a deluge of fairly rote RPGs and FPSs,¹⁵² and its colorful gameplay (combined with the unforgiving nature of its early game modes) made it extraordinarily popular. Early players of the game were mostly adults and mostly “gamers,” who often described *Minecraft* as a “digital Lego” world.¹⁵³

During the alpha, the featured fairly limited resources, gameplay modes, and enemies. In the early release versions of the game (post-alpha), players worked to build shelters and weapons in order to defend themselves from enemies (“mobs”) that would appear at night and in the depths of caves. Exploration was encouraged only insofar as it allowed players to gather more resources, enabling them to build better structures and to craft better items. As development continued, however, the creative, nonviolent gameplay features attracted a wider and wider audience. The addition of multiplayer servers (in addition to a schedule of frequent core gameplay updates¹⁵⁴) helped Persson gather attention to the game. As more and more people played, the collaborative creations that these servers fostered became marketing material in its own right. People generated images of spectacular creations developed in the game, and more and more the market expanded to include a younger audience and “non-gamers.”¹⁵⁵

Predictably, as *Minecraft*’s popularity among children flourished, so too did its promotional material expand in scope. Early merchandising was fairly typical of the tech-industry (T-shirts and stickers), but soon Persson began producing branded toys and other merchandise. Fittingly (or, perhaps ironically), the company entered into a major merchandising deal with Lego in 2012.¹⁵⁶ Currently, the game itself is heavily marketed to a very young demographic; the official website offers a special *Minecraft: Education Edition* with accompanying classroom materials and teacher

¹⁵²The late 00s and early 10s saw a glut of “gritty” and “realistic” games of the muddy and beige persuasion.

¹⁵³Goldberg and Larsson, *Minecraft*.

¹⁵⁴See Redmond, “The Videogame Commons Remakes the Transnational Studio,” Table 1. loc 250.

¹⁵⁵Ibid.

¹⁵⁶Goldberg and Larsson, *Minecraft*.

resources. As Bogost proclaims in *How to talk About Videogames*, *Minecraft* is a game of co-creation. It is also “a game for children.”¹⁵⁷

The monumental success of the game has had an impact on real world architecture, as well. As a part of the Block by Block project, which began in 2012, UN-Habitat (the United Nation’s sustainable cities program) has been collaborating with Mojang to support the design of better real world spaces using *Minecraft*. The UN-Habitat team recreates urban areas in *Minecraft* (referencing satellite imagery, original building plans, etc.), and then arranges for a “*Minecraft* expert” to train community members in both spatial practice and in the game itself. Using the game encourages community engagement and allows for rapid spatial visualization, which is then developed into professional design proposals.¹⁵⁸ Other architectural projects have also leveraged *Minecraft* as a development tool. The Royal Institute of British Architects (RIBA), for example, recently commissioned the *Minecraft* build studio Blockworks to recreate Palladio’s Villa Rotunda in gamespace.¹⁵⁹ Blockworks has been similarly commissioned for a number of build projects for clients such as Disney, Warner Brothers, The Guardian, and Microsoft. On a smaller scale, the game is currently used for developing and prototyping small models using open-source tools like Mineways.¹⁶⁰

In addition to the wide variety of open-source software that gamers have created to support *Minecraft* play (map creators, tools, and other software), the game itself has always had a deep connection to mods and mod culture. *Minecraft*’s simple and easily accessible codebase means it has always had a low barrier to entry for beginner game modification. The ability for players to host their own maps on custom servers similarly democratizes the play space. As Redmond describes, “Mojang does not operate these servers or regulate their content, but simply gives the fan community the tools it needs to create its own multiplayer game-worlds.”¹⁶¹ In early builds of the

¹⁵⁷Bogost, *How to Talk About Videogames*, loc 1131, 2933.

¹⁵⁸Block By Block, “About.”

¹⁵⁹Royal Institute of British Architects, “Palladian Minecraft”; BlockWorks, “Palladian Minecraft.”

¹⁶⁰“Mineways.”

¹⁶¹Redmond, “The Videogame Commons Remakes the Transnational Studio,” loc. 321-322.

game, Persson frequently solicited feedback from alpha and beta testers, and content developed by fans was regularly added into the main game.¹⁶² This places Mojang's game not only as a prime example of worldbuilding as a core gameplay element, it also segues into the role of centripetal worldbuilding, in which peripheral practices of space and placemaking are incorporated into main game.

Exploration 2: worldbuilding at the periphery

In his exploration on the ethical nature of games as blackbox systems, Miguel Sicart takes the position that computer games in particular are uniquely restrictive due to their defined rulesets. These videogames, he writes differ from board games and other in-person games because they “*impose* the rules: they are not subject to discussion.”¹⁶³ Bateman takes issue with this notion, both in a 2010 discussion with Sicart on his personal blog¹⁶⁴ and later in *Imaginary Games*, where he rebuts, “the social level is not in any *a priori* sense excluded from the game as such, and the rules of digital games are subject to change in a number of different ways.”¹⁶⁵

As I have already described with *Minecraft's* rich history of modified content and centripetal development, video game rules are by no means set in stone. It is this notion of the game as an open system¹⁶⁶ that is the focus in this next exploration, specifically as it pertains to the act of worldbuilding through digital *bricolage*.

Digital *bricolage*: worldbuilding in Mod Culture

While many gamers are content to consume game content “as-is” with no modification, there exists a huge subculture of game modders—players who design, develop and release game modifications—who work tirelessly to break and reconfigure game worlds to suit their particular needs. Depending on the game, these mods can range from the relatively small-scale (e.g. custom objects, furnishings or outfits for player

¹⁶²Ibid.

¹⁶³Sicart, *The Ethics of Computer Games*, 27.

¹⁶⁴Bateman, “Sicart & Bateman (1).”

¹⁶⁵*Imaginary Games*, 46.

¹⁶⁶Albeit not always legally. Cf. Christiansen, “Players, Modders and Hackers.”

characters) to the monumental (e.g. entire games built out of the parts of other games). These fan-programmers introduce new challenges with regard to production and monetization of game content, but also offer a remarkably robust culture of grassroots game content for users to explore.¹⁶⁷

Recognizing the long-standing, ontologically difficult, and often divisive history of mods within the games industry, there are nonetheless important lessons to be learned by examining its influential role in the overall landscape of game development. Depending on the publisher, modders might be penalized (as was often the case with companies like Atari, Sierra and Sega¹⁶⁸) or encouraged (as was the case with early Id software titles *Wolfenstein 3D* (1992) and *Doom* (1993), or with recent titles like Bethesda Inc's open-world *The Elder Scrolls* series (1994- present) and the *Fallout* series (1997- present).¹⁶⁹ Today, mod support is built in to a number of PC games sold on the online distribution platform *Steam* (these mods are packaged through the "Steam Workshop"), and some recent console games even feature low-level support for user-created mods.¹⁷⁰

Most modern games are developed and built using game engines. These engines allow game makers to focus on adding content to their game levels rather than constantly writing code to simulate lighting, physics, collisions, and other essential elements of "realism" in real-time. As a result, the process of developing game content often follows a similar workflow, even between vastly different game projects.¹⁷¹ Game players who are interested in developing titles of their own often look to these engines and to games built with them in order to learn processes of gamemaking. Modding games is, for many, an entry into the world of development overall.

In his survey of the computer game modding scene, Walt Scacchi outlines three types of game mods: user interface customizations, game conversion mods, machinima and

¹⁶⁷Postigo, "Of Mods and Modders"; Postigo, "Video Game Appropriation"; Postigo, "Modding to the Big Leagues."

¹⁶⁸Christiansen, "Players, Modders and Hackers."

¹⁶⁹These games were released with freely-available level design tools. *ibid.*

¹⁷⁰Good, "Fallout 4 PS4 Mod Support."

¹⁷¹Christiansen, "Players, Modders and Hackers."

art mods.¹⁷² Commonly, modding-as-worldbuilding takes the form of custom levels and spaces built with original game content. By using professionally developed, prebuilt game content as a kit-of-parts, novice gamemakers are able to make spaces with a very low barrier to entry in terms of both time and expertise. This allows players to take an active role in shaping their experiences of gameworlds and game spaces.¹⁷³

The titles selected for modification can be linear or open-world, and can be created by large companies or independent developers. Some recent examples of games that encourage modified level content include Valve titles such as *Portal* and *Portal 2* (both of which featured level editors), Frictional’s *Amnesia: The Dark Descent* (2010), Bohemia Interactive’s *Arma 3* (2013), and many more. The popular title *Garry’s Mod* (2006), which was itself originally a mod for Valve’s *Half-Life 2*,¹⁷⁴ features an open-world sandbox that allows players to access content from any installed Source Engine game. The tagline for the game speaks to this, proclaiming “Garry’s Mod is a Sandbox Game based around the idea of building. Unlike most other games, there aren’t any objectives—you can’t lose and you definitely can’t win.”¹⁷⁵ *Garry’s Mod* itself is extraordinarily extensible, and has been modded repeatedly to allow players to create more structured gameplay experiences within its framework. At time of writing, the official Steam Workshop page for the game has 1,026,134 mods, with many more likely available through unofficial channels.¹⁷⁶

A number of independent developers have roots in game modding practices. For example, both the serious epistolary title *Dear Esther* (2012)¹⁷⁷ and the charmingly irreverent story *The Stanley Parable* (2013) were originally developed as mods for *Half-Life 2*,¹⁷⁸ both games were later released as stand-alone titles with highly im-

¹⁷²Scacchi also includes the practice of hardware hacking—custom gaming PCs and console hacks—as evidence of mod culture Scacchi, “Computer Game Mods, Modders, Modding, and the Mod Scene.”

¹⁷³Postigo, “Video Game Appropriation”; Sotamaa, “When the Game Is Not Enough.”

¹⁷⁴Pearson, “A Brief History Of Garry’s Mod.”

¹⁷⁵“Garry’s Mod.”

¹⁷⁶“Steam.”

¹⁷⁷Reynolds, “Letters and the Unseen Woman.”

¹⁷⁸“Dear Esther Mod for Half-Life 2”; “The Stanley Parable Mod for Half-Life 2.”

proved production design (i.e. professional voiceovers, composed scores, and improved graphics). Owing to the success of both the mods and the stand-alone games, both developers went on to release other successful game titles. The Chinese Room developed a sequel to Frictional's (2010) *Amnesia*, and Galactic Cafe's Davey Wreden released a heartfelt and introspective critique of games culture with his recent *The Beginner's Guide* (2015). This story of development is repeated countless times throughout the independent games world. For example, as Chris Franklin profiles in his web video series *Errant Signal*, BLENDO Games' Brendon Chung honed his game style through a number of story-based mods for the game *Ultima*, which ultimately led him to start publishing his own titles under his own company.¹⁷⁹ Chung's *Thirty Flights of Loving* (2013) and *Quadrilateral Cowboy* (2014) both won awards at independent game festivals around the world.¹⁸⁰

Mod culture is not without controversy. Not only do publishers frequently frown on users breaking their games (and their DRM) to reconfigure game content, there were significant concerns when, in late 2015, the Steam Workshop allowed users to charge money for their mods. Many saw this as a breach of ethics, although arguments against the practice varied greatly. Some objected to the idea of individual players profiting off of the work of game studios. Others noted that, in keeping with an open-source tradition of mod culture, these paid mods often featured the free work of other modders (who would not necessarily receive compensation for their contributions to the code of the paid mod). However, given the depth and scope of some of the mod projects intended for sale in the Workshop, many argued that their value should be recognized on the marketplace in order to encourage higher quality mods in the future.¹⁸¹

Christiansen¹⁸² and Redmond¹⁸³ both cite the robust culture of modders as a primary

¹⁷⁹*Blendo Games.*

¹⁸⁰BLENDO, "About."

¹⁸¹Postigo, "Of Mods and Modders"; Prescott, "Valve Has Removed Paid Mods"; Purchase, "Paid Skyrim Steam Workshop Mod."

¹⁸²"Players, Modders and Hackers."

¹⁸³"The Videogame Commons Remakes the Transnational Studio."

factor in Mojang's successful development of *Minecraft*. Indeed, mod culture has long been seen as a gateway into games development, which can otherwise be both technically and functionally prohibitive. By opening game content up to be reused and repurposed by independent users, software developers can create a flexible, generative ecosystem that would be impossible to achieve in a closed-studio environment. What is more, the appropriation of space through modification teaches players how to work with games as systems, and ultimately reinforces the worldbuilding practices embedded in the design of gamespace.

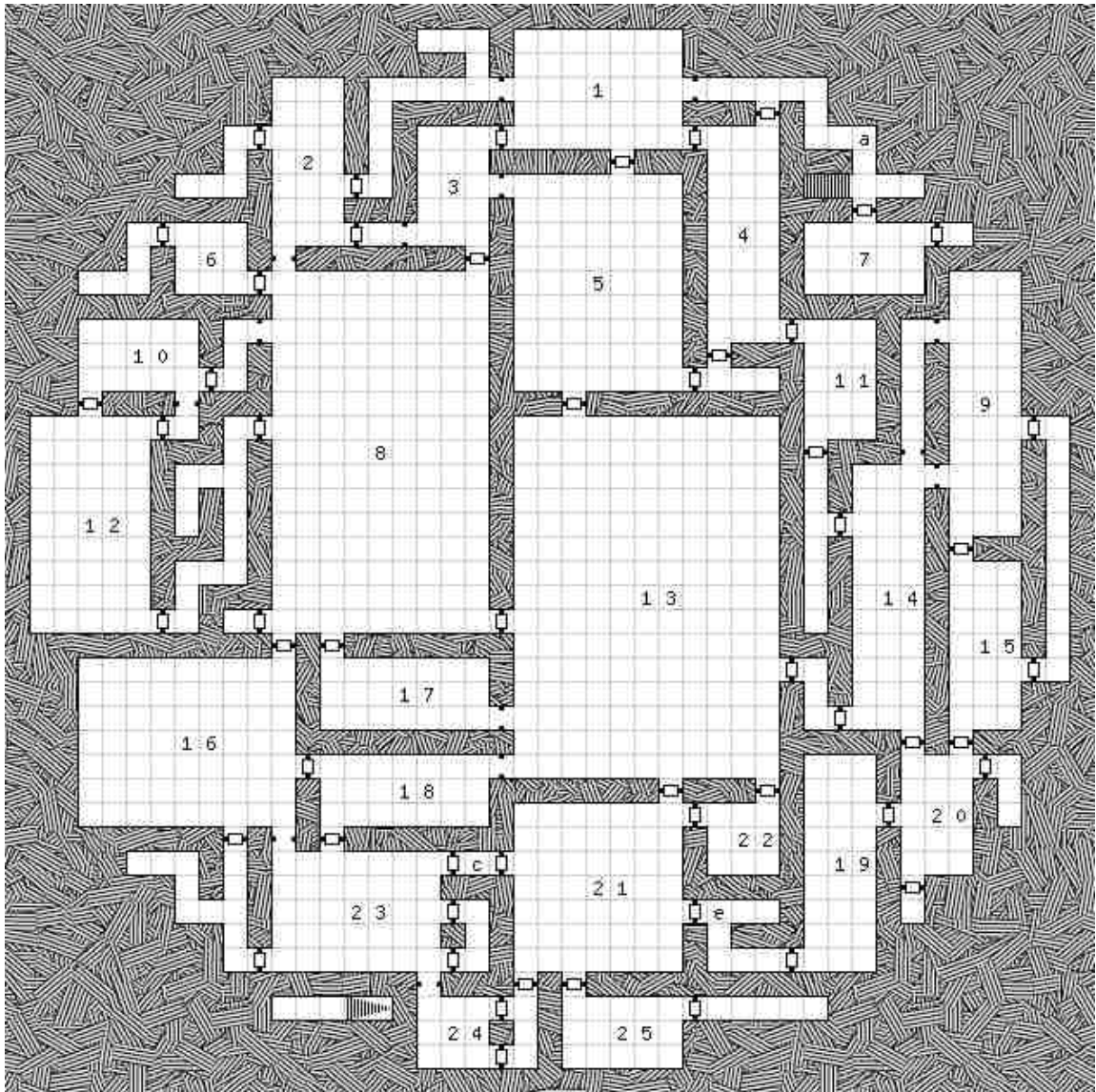


Figure 3.2: A random dungeon generated with the donjon 5e generator. Generator by drow, CC BY-NC 3.0.

Chapter 4

Conclusion

From the cathedral to the bazaar

At present, computation in the field of architecture tends to focus on the notion of formal parametricism and form-based design. However, I argue that there is more to be learned from the software industry than is found in code-focused praxis. Embedded in the design philosophy of software development, there is a surprising and significant amount of overlap between the approaches outlined in chapters 1 and 2. This overlap calls for a return to a playful model of design thinking.

A more approachable method with which to unpack this overall exploration can be found, appropriately, in the world of software architecture: specifically in the famous essay by Eric S. Raymond titled “The Cathedral and the Bazaar.”¹ The essay, a seminal and widely influential call-to-action for the open-source software movement, looks specifically at the design philosophy of software developer Linus Torvalds. Torvalds’ claim to fame is his Linux kernel, an early, open-source development project that was wildly successful even in the competitive market of the early 1990s. Raymond makes the case that Linux was remarkable and subversive not due to the content of its codebase (which he adapted from the existing Unix system), but instead due to the processes through which it was developed and maintained. Referencing typologies of the built environment, he draws parallels between the traditional soft-

¹Raymond, “The Cathedral and the Bazaar.”

ware design model (the “over-the-wall” method) and the new, open-source software method (seen, for example, in current Agile design and development methods). Raymond likens the two disparate design strategies to the architectural ideas at play in the design of cathedrals and of bazaars.²

The two approaches diverge, Raymond argues, primarily in their understanding of management and collaboration. The traditional approach is the top-down, authorial design of a cathedral (the one- or few-to-many model, with pre-defined design goals and strong central organization) and it stands in sharp contrast to the bottom-up, collaborative, wild process at play in open-source projects, which mimic the design of a bazaar (many-to-many, with loosely defined design goals and no strong central organization). The second approach allows for a myriad of benefits, including community-focused development strategies, faster rollouts, targeted change sets, and, ultimately, a much greater sense of individual agency.³

Beyond the obvious (and quite evocative) architectural references, Raymond’s essay is directly applicable to our current state of architectural praxis. Raymond makes the case that we need to reevaluate our current systems-thinking approaches, and he calls for a return to fun and playful design.⁴ Again, as Lauwaert describes: “with the shift from a one-to-many production process to a many-to-many model of design, production, and marketing, the way in which toys and players shape one another intensifies, becomes more direct and instrumental.”⁵ The same interplay between centripetal and centrifugal appropriation of production is not limited to toys and play; it can be seen across all areas of production. Given the speed and availability of our current design development processes, the lines between producer and consumer are blurring, and the appropriative actions of the traditionally disempowered consumer begin to take on new and radical importance.⁶

As presented in the previous discussion of mod culture in the videogame world, this

²Ibid.

³Ibid.

⁴Ibid., Bogost, *Unit Operations*.

⁵Lauwaert, *The Place of Play*, 19–20.

⁶Ibid.

process of appropriation begins to get messy when the exchange of capital is involved. When a user breaks a system and appropriates elements of it, who is the ultimate owner of those elements? Similarly, does the core developer have the right to access derivative works made in the periphery? Again, this analysis circles back to the earlier work of philosopher Michel de Certeau, who put it in terms of “strategies” vs “tactics”. Strategies are functions of the power systems that control space, while tactics represent the myriad of methods through which the individual regains spatial agency.⁷ This process of shaping and configuring space is central to de Certeau’s study of the boundary between work and leisure.

Both de Certeau and Raymond cite an underlying nature of vulpine cleverness at play in collaborative and appropriative design strategies. De Certeau uses the adjective to introduce his “ways of operating,” saying, “sly as a fox and twice as quick: there are countless ways of ‘making do.’”⁸ Raymond remarks that the Linux code itself was not the most interesting feature of Linux—the Linux development model itself had much more substantial implications. Despite dealing with a project of immense complexity, the Torvalds’ model allows developers to leverage the work of peers and other users. In Raymond’s words, it lets the developer be “lazy like a fox.”⁹

For the software development process in particular, the difference between the two strategies of design are very much differences of play. Mundane programming tasks like, for example, debugging, are tedious and exhausting when left to the sole responsibility of one or a few individuals. In the Linux development model, however, these process themselves become the means of community participation, and therefore become acts of collaboration, cooperation, and lighthearted competition. By returning agency to the end-users, Sisyphean development tasks cease to be drudgery: they (can) become a form of game. Leveraging this social element reduces individual labor, increases overall fun, and ultimately contributes to a body of shared knowledge for both current project collaborators and for use as future reference.

⁷De Certeau, *The Practice of Everyday Life*.

⁸Ibid., 29.

⁹Raymond, “The Cathedral and the Bazaar,” 6.

As Raymond describes, the cathedral model represents the traditional strategy of software development; in this process, a small team works tirelessly (and in isolation) towards a deadline defined by external forces (budget, client, or management) to produce an artifact that is carefully crafted and released in its totality. It is a systems design approach that emphasizes the agency of the author, and forces developers to attempt to anticipate user interaction.¹⁰ This approach is evident in current practices of parametric architecture, as Jovanovic alludes, which are an inherently violent extension of this top-down strategy of design. Jovanovic warns:

“An architect is now an omnipresent and omniscient entity with full control over the design space, which supposedly ensures that his authorship is visibly imprinted. This notion of total visual empowerment is a heritage of the military roots of the digital regime, and leads ultimately to very problematic and unexamined political outcomes of design processes, best witnessed in totalising fictions like Parametricism.”¹¹

By contrast, the bazaar model takes the opposite approach: it is a network ecology, an object oriented ontology, a unit operational process. Where the cathedral approach is top-down fictionalizing, the bazaar model is bottom-up worldbuilding.¹² Meaning, value and agency are only weakly present on a meta-structural level; ultimately the direction and use of the artifact is determined entirely by its contributor base. This is the example we should strive to reincorporate into our architectural design process, and it is one that is already being explored in some spheres of contemporary architecture. Specifically, these modes of practice are visible in the work of Atelier Bow-Wow and Alejandro Aravena. I conclude this thesis by drawing attention to these two practices as modern pioneers of playful architectural worldbuilding.

¹⁰Ibid.

¹¹Jovanovic, “Fictions.”

¹²This mimics Herman’s observations regarding the cognitive mechanisms through which we comprehend narrative storyworlds, which he establishes as having both top-down and bottom-up configurative elements. “Storyworld.”

Current examples of practices at play

Making-do in Tokyo: Atelier Bow-Wow

While *worldbuilding* as a unit operational act may seem (at face value) to be only appropriate for media criticism and software development, it too has siblings to be found in the world of architectural theory and critique. In 1974, philosopher Henri Lefebvre wrote his seminal book *The Production of Space*, in which he explored the myriad ways in which people take control of spaces around them through small acts of spacemaking.¹³ Much like the process of *bricolage* described by Lévi-Strauss or the intentional artistic interventions described later by Debord, Bourriaud, and others,¹⁴ Lefebvre outlined ways in which the act of spacemaking could itself be political and revolutionary. By looking to the role of the social—both of the individual user and of the collective—his framework shifts the focus away from an architecture of materiality and towards an architecture defined by social practice. We build our lives in the social and spatial conditions within which we find ourselves; we are, essentially, constantly in the process of worldbuilding.

As a result of this direct dialogue between the non-architect and the surrounding space, urban conditions take on their own language and develop unique dialects and vocabularies. Lefebvre describes this architectural language as a reflection of the Gramscian hegemonic power structures at play in an urban landscape; it is a direct map of social conditions to environmental constructs.¹⁵ However, this exploration of the language of the city need not necessarily take such a fatalistic tone: the vocabulary of the city can also be quite playful. The exploratory analytic projects of Yoshiharu Tsukamoto and Momoyo Kajima (and their Tokyo-based firm, Atelier Bow-Wow) speak to the myriad ways in which this dialogue of urban life is often vibrant and irreverent.

¹³Lefebvre, *The production of space*.

¹⁴Bourriaud, *Relational Aesthetics*.

¹⁵Kipfer, “How Lefebvre Urbanized Gramsci.”

In a playful essay titled “Insect-Hunting,”¹⁶ the duo lays out the methodology that they undertook as part of their *Made in Tokyo* project—an exploration of architectural incongruities in Tokyo, Japan—and tie their practice back to their own childhood play. Citing inspiration from Bernard Rudofsky,¹⁷ Venturi, Brown and Izenor¹⁸, Rem Koolhaas¹⁹, Wajiro Kon,²⁰ and Terunobu Fujimori,²¹ the *Made in Tokyo* project outlines a new methodology for urban critique.²² At its core, their writing and research speaks to this critical exploration of *worldbuilding* as social and architectural practice.

The team looks at the city as an organism operating at multiple scales: it is itself alive, it has city-scale “organs” (e.g. power plants, waste centers) and an ecological fabric. Ultimately, the individual elements comprise what they term “Environmental Units.” These units are places that “can only be completed when assimilated into the surrounding civil engineering structures—a building as a segment of urban ecology.”²³ This unit-based critique mirrors the “flat ontology” approach outlined in Bogost’s comparative media analyses—indeed, they acknowledge their non-hierarchical methodology, saying:

By treating the relation between elements as the major issue, we tried to see the object without pre-conditioned meanings and categories. We

¹⁶Atelier Bow-Wow, *Echo of space/space of echo*, 25–33.

¹⁷Specifically, they reference his 1964 exhibition “Architecture without Architects,” in which he explores the role of the environment in shaping vernacular Architecture *Architecture Without Architects; Architecture Without Architects (MoMA)*

¹⁸*Learning from Las Vegas*.

¹⁹*Delirious New York*.

²⁰Kon (1888-1973) developed a methodology, called “modernology” (*kōgengaku*), which remains highly influential in Japanese cultural critique to this day. See Kon and Fujimori, *考現学入門 (Kōgengaku Nyūmon, “Introduction to Cultural Studies”)*; Kogakuin University, “今和次郎コレクション [しらべもの (考現学) 展覧会] (‘Wajiro Kon Collection’); Sato, “今和次郎「考現学」の射程と比較文化 (‘Kon Wajiro’s “Modernology” and Comparative Cultures’).”

²¹Fujimori is the founder of the Tokyo Architectural Detective Agency and a co-founder of the Street Observation Society. See Akasegawa, Fujimori, and Minami, *路上観察学入門 (“Introduction to street observation”)*; Fujimori, “Under the Banner of Street Observation.”

²²Kaijima, Kuroda, and Tsukamoto, *Made in Tokyo*.

²³Atelier Bow-Wow, *Echo of space/space of echo*, 323.

tried to look at everything flatly, by eliminating the divisions between high and low cultures, beauty and ugliness, good and bad... So if we try to collapse da-me architecture into a typology, we will lose the interesting mongrel nature of the differing elements. Our flatness means something more specific.²⁴

At a formal, surface level, their work may seem to mimic the architectural theories of 1960s Metabolists (Kenzo Tange, Fumihiko Maki, Kisho Kurokawa and others); however, Tsukamoto is critical of this movement in Japanese architecture. “Japanese daily urban structures are produced by the collision of different conditions,” he said in an interview with Archinect. “This kind of understanding of the city is totally different from an urbanism based on shape.”²⁵ The urban character of the buildings in Tokyo, they argue, is clearly a function of human behaviors colliding with environmental constraints. The result is an urban vocabulary that includes both understandable collisions—e.g. museums and shops tucked under rail lines and expressways—and those bordering on ridiculous—e.g. shrines on top of shopping centers and “vampire parks”. These spaces exist in increasingly absurd conditions of spatial maneuvering. For Atelier Bow-Wow, this is where honest architecture occurs.²⁶

While they did not draw a connection between their explorations and the work of Lefebvre, there is nonetheless a strong overlap. For Tsukamoto, “the power and capital of making the city is not congregated in one part; it is segregated and dispersed. It is very important to use this fragmented energy to make the city and bring in a meaningful production of urban space.”²⁷

During the course of their research for *Made in Tokyo*, the Atelier Bow-Wow team also stumbled upon a subcategory of this urban vocabulary: they discovered a language of micro-architectures that they term “pet architectures.” These spaces are thoroughly

²⁴Kaijima, Kuroda, and Tsukamoto, *Made in Tokyo*, 10.

²⁵White, “Tokyo Anatomy.”

²⁶Kaijima, Kuroda, and Tsukamoto, *Made in Tokyo*; White, “Tokyo Anatomy.”

²⁷White, “Tokyo Anatomy.”

explored in their follow-up book, *Pet Architecture: a guidebook*.²⁸ Similar to the playful constraints of the *Made in Tokyo* projects, these small spaces speak to the underlying lessons of playful worldbuilding, and can again be viewed in parallel with processes of childlike play and spatial reconfiguration. As Janet McCracken describes in her essay “The Aesthetics of Playtime Recycling,” construction toy play ultimately teaches a very specific altitude about both materials and constraints.²⁹ “These toys are intended to be used and reused, cyclically. The productions to which they contribute are neither preserved like art, nor abandoned like garbage, but continually broken down for materials.”³⁰ Citing Frank Lloyd Wright’s notion of “littleness” in architecture—i.e. architecture that addresses design problems from a human scale—she advocates for a return to spacemaking that embraces everyday joys.

“Little aesthetic concerns, by contrast, have meaning for us... we can investigate them in playtime recycling, over and over again, expanding our lives in some magical way, through repetition; expanding the conceptual space of human life by loosening the grip of its real-world constraints”³¹

Pet Architecture is a profound and expansive catalogue of such works of “little” architecture. These spaces are configurative play made manifest in the real world, and they speak to the infinite possibilities that arise out of the urban condition. As previously referenced, Ricœur defines architecture as a configurative process of building fictions; *Pet Architecture*, therefore, documents a vast multiverse of fictional worlds to explore.

Aravena and the “incremental” house

If Atelier Bow-Wow discovers and documents architectural worldbuilding after the fact, then Pritzker Prize winning architect Alejandro Aravena directly facilitates the

²⁸ Atelier Bow-Wow, Tokyo Institute of Technology Tsukamoto Architectural Laboratory, and Shinada, *Pet architecture: guide book*.

²⁹ McCracken, “The Aesthetics of Playtime Recycling.”

³⁰ *Ibid.*, 192.

³¹ *Ibid.*, 201.

process of worldbuilding. Indeed, the “incremental housing” projects developed by Aravena’s firm Elemental are perhaps the best current example of playful worldbuilding as applied to architectural praxis. I will unpack this claim with reference to two of his firm’s major housing projects: the Quinta Monroy project and the Villa Verde project.

Due to the sociopolitical climate of South America in general, the designers at Elemental are often forced to work within stringent budget constraints (more so than equivalent large-scale housing projects in North America or Europe). In addition, Chile in particular has experienced widespread political upheavals, culminating in a relatively recent transition to democracy. This, along with the rapidly proliferating dialogue regarding environmental sustainability, has focused the discourse of urbanism in Chile towards environmental stewardship through democratic, sustainable urban practice.³²

Aravena founded Elemental while teaching at Harvard University in 2001 alongside engineer Andrés Iacobelli. Currently, the firm operates as a “do-tank,” working alongside students and researchers at the University of Santiago to overhaul the process of housing and development in Chile. The team is bounded within both the regulatory and economic constraints of the region.³³ “The new regime does not have—and will not create—instruments such as the regulation of the real-estate market or public housing offices,” writes Marie-Hélène Contal-Chavannes in her profile of the firm. “Elemental, for its part, must *hacer mas con lo mismo*: do more with the same—the same budget as for ordinary public housing, the same high price for land.”³⁴

The first incremental project that Elemental undertook sought to provide housing for 93 families in Iquique, Chile. The project, which began construction in 2003, had a paltry budget the equivalent of US\$7500 per family.³⁵ Under such severe constraints,

³²Contal-Chavannes and Revedin, “Elemental.”

³³Aravena, “Elemental”; Contal-Chavannes and Revedin, *Sustainable Design*.

³⁴“Elemental,” 114.

³⁵Elemental, *Quinta Monroy*; Aravena, “Elemental.”

traditional Western-style public homes were simply unfeasible. Instead, they opted for building low-cost, quick-build concrete frame homes on simple concrete-slab foundations. The first floor of each home covers the entire foundation—each family unit is separated by load-bearing walls. However, the second level only covers half of the space, containing only the essential programmatic elements that would be impossible for the family to install on their own.³⁶

Regarding the decision to build these homes with a such significant void space, the team states “we prefer to build half a good house rather than a bad dwelling.”³⁷ The homes, once completed, were immediately livable, but remained both socially and environmentally sustainable through their adaptability and flexibility. The framework architecture and the DIY spirit of the inhabitants (many of whom are craftspeople and journeymen) enabled each family to double the square footage of their homes for a paltry sum, at their own pace. Five years after the construction of the Quinta Monroy project, each of the homes has risen in value to at least US\$20,000.³⁸

Even when not challenged by extreme budget limitations, Elemental works to integrate this incremental development strategy into practice. As a more recent example, the firm was commissioned to develop an employee housing community for Celulosa Arauco y Constitución S.A. (Arauco), a major Latin American forestry company. The project ultimately housed 484 workers and their families in Constitución, Chile,³⁹ and each home sold for between US\$25,000 and US\$40,000. Rather than using the extra available funds to develop a “complete” set of houses, the firm continued its incremental development strategy: the additional money went towards developing a set of base homes with better materials and higher construction standards. The homes feature standard timber framing, pitched roof construction situated on standard concrete foundations. Their finishings are unremarkable: basic zinc roof, gypsum interior, fiberboard exterior. What makes the homes unique is what is *not* built: each home is separated from its neighbor by a large void space. Without

³⁶Contal-Chavannes and Revedin, *Sustainable Design*.

³⁷Elemental, as quoted in Contal-Chavannes and Revedin, “Elemental,” 116.

³⁸Contal-Chavannes and Revedin, *Sustainable Design*; Aravena, “Elemental.”

³⁹Elemental, *Villa Verde*.

any additions, the void is a simple flexible use space; however, the first-floor joists that span from the built portion to the adjacent party wall afford the residents the opportunity to add an additional 28 square meters to their homes.⁴⁰

Elemental's projects underscore the value of play⁴¹ and the unit operation of worldbuilding in architectural praxis. Moreover, the reconfigurability and modularity of Aravena's incremental projects speak to a rich history of DIY spacemaking in architecture culture. Elemental uses worldbuilding as a foundational strategy of practice—the firm's work showcases the positive benefits of a design that encourages dialogue between architect and resident. By working within the constraints of both projects, Aravena's homes essentially become human-scale Lego sets. The act of spacemaking, of living within and contributing these communities, has real social and economic value. In this way, worldbuilding is a playful architectural operation that can revolutionize the way that we think about and construct space.

A ludic call to action

Architecture is a process of spatial storytelling through which one is able to create new worlds. By recognizing this, we are able to work with intention to build our own storyworlds and to engage in collaborative practices of worldbuilding.⁴² This process is not either-or, not solely “top-down vs. bottom-up”, but is instead a complex framework where users can slot themselves comfortably into spatial narratives at whatever scale is appropriate. This renaissance of DIY development has rendered the traditional methods of production obsolete—building blockbuster content for a small group of highly dedicated fans is unsustainable. Former games culture writer Leigh Alexander⁴³ put this beautifully (and succinctly) when she stated: “‘Gamers’ are

⁴⁰Strange, “Villa Verde Housing, Chile.”

⁴¹Defined as a deliberate strategy for leveraging constraints, as stated previously.

⁴²Jenkins, “Game Design as Narrative Architecture”; Herman, “The Third Element.”

⁴³Formerly the editor of BoingBoing's *Offworld* magazine, Alexander wrote my all-time favorite work of criticism about the game *Bioshock: Infinite*, titled “Now Is The Best Time.” I highly recommend that readers unfamiliar with games criticism as a practice look to her work (as well as the work of *Cool Ghosts*' Matt Lees, *The New York Times*' Chris Suellentrop, and *Kotaku*'s Kirk Hamilton) for the cream-of-the-crop in an industry

over.”⁴⁴ Instead, by fostering play, we also foster a collaborative culture of creativity.

The value of toys, games, and reconfigurable architectures lies not in their ability to teach people how to be architects—the reality is much more subtle (and, arguably) more valuable. Playful worldbuilding teaches users how to read, understand, and ultimately reconfigure spatial systems. Following this, worldbuilding becomes valuable, encoded spatial knowledge. “This knowledge and insight is essential if you want to create something yourself or appropriate an existing tool so that it might better fit your personal needs” writes Lauwaert. “More importantly, this knowledge also enables you to ‘read’, assess and analyze existing technological tools and mechanisms more thoroughly and critically.”⁴⁵

The most important operation at play in these explorations (be they physical—toys—or digital—games) is that of worldbuilding, the process through which individuals discover and leverage the production of space to suit their individual needs. The studios that produce AAA videogame level design and environment art are similar in structure to large architecture firms—they are, by necessity, top-down management structures in which people make big decisions that trickle down to peons. This system-level authorship inherent in both elaborate digital gamespaces and complex simulated architectures is fundamentally no different than that of High Modernism. Instead of re-thinking the tools we use to design and simulate buildings, the next movement in architecture could instead away from the practice of architect-as-author. The future of architecture does not lie in high-level simulation technology, in virtual reality, or in complex synthetic spaces. Instead, it can be found in honest, playful spaces and places.

Independent software titles are equivalent in scale to the DIY home builder or the small architectural firm. These architects and architectures are often exploratory and playful. By reframing them, too, through the lens of the unit operation of *worldbuilding*, we can glean new techniques of grassroots space/placemaking. Spacemaking

saturated with mediocre journalism.

⁴⁴Alexander, “‘Gamers’ Don’t Have to Be Your Audience. ‘Gamers’ Are over.”

⁴⁵*The Place of Play.*

is empowering, and the practice of playful architecture becomes a tactic of spatial agency. Ultimately, I call for a reintegration of play in architecture, characterized as design that is:

- Non-cynical (i.e. genuine, as opposed to “true”)
- Non-anthropocentric (“object-oriented”)
- Non-linear (innovation through exploration, not endless “progress”)
- Non-authorial (collaborative, many-to-many, decentralized control)
- Non-static (longevity, responsiveness—more than surface level— reconfigurability)

One strategy for achieving these goals is by intentionally leveraging play in practice. The play element is fundamental to the future of design. We are moving towards a future in which architects act as spatial facilitators, thus creating socially engaged frameworks within which people can build their own rich worlds. As Lord Peter Palumbo, Chair of the Jury of the Pritzker Prize, is quoted in the 2016 prize announcement, upon visiting Aravena’s projects, the jury “felt a sense of wonder and revelation; they understood that his is an innovative way of creating great architecture, with the best yet to come.”⁴⁶

Architecture is far too complex to be defined by a one-size-fits all analytic framework—it is instead a complex network of “units” defined through their operational relationships. Our best approach to designing usable and meaningful spaces is, therefore to be mindful of such processes, and to approach them holistically as attempts at intentional, playful worldbuilding. This will serve a dual purpose: it will help bridge the functional gap between the one-to-many and many-to-many approaches, and it will underscore the importance of recognizing and cultivating the rich narratives embedded in our environments. In this way, architecture can help us achieve “the promise of a golden future.”⁴⁷

Digital technology gives us the illusion of total understanding. Good architecture

⁴⁶Pritzker Architecture Prize, “Announcement.”

⁴⁷Ibid.

arises as a function of design constraints; we must not be tricked into the fiction of control afforded by complex modeling and systems-based design. We can learn a lot more by unpacking spaces as bottom-up, collaborative worlds than we can from trying to create limiting, complex, and inhumane top-down systems. While this may seem unrealistic and idealistic, it is already being put into practice to great effect, both in architectural analysis and architectural design. Once again in the immortal words of Bruno Taut, “Down with seriousness!”⁴⁸

Ultimately, my goal with this broad survey is to reframe play and games in architectural discourse, to decouple the term “videogame” from its current ties to photorealistic simulation and virtual reality, and to call for a more open-access architecture. This is not a revolutionary idea; games and play have long been an element of architectural praxis. However, we seem to have lost our utopian spirit of childhood design and play. Modern digital games represent the latest in a long line of playful approaches to spacemaking, practices that could potentially be of great benefit to today’s architects. By once again incorporating play in our dialogues about space, we can ultimately design better buildings. We can use such play to cultivate a more democratic form of spacemaking. Game engines can and should be more than just tools for simulation and presentation: they can channel the collaborative spirit of play back into our architectural practice. Instead of focusing on serious, complex systems as such, let us look to pixel skylines, imaginary dungeons, and other virtual menageries in order to once again imagine an architectural future in which anything is possible.

⁴⁸Conrads, *Programs and Manifestoes*, 57–58.

Glossary

- **AAA Game** “Blockbuster” style games developed by large studios. Often criticized for lack of coherent authorship and heavy reliance on marketing.⁴⁹
- **API** Application Program Interface, a code framework that allows one program to “speak” to another, exchanging data and services.⁵⁰
- **Digital rights management (DRM)** Proprietary software protection and licensing.
- **Dungeon Master (DM)** The lead player in a game of *Dungeons and Dragons*, who is ultimately responsible for setting the context and story of the game, establishing and maintaining the pace of the campaign, and progressing players through the story. In addition to establishing traditional story elements (plot, characters, etc.), the DM (in collaboration with the players) actively designs the spaces of gameplay in which the story takes place.
- **Fictionalism** A philosophical view that establishes that all knowledge is fictional, and therefore has rhetorical implications beyond empiricism. See Midgely, Bateman, and others.
- **Indie Game** In contrast to the AAA game, Indies are a loosely defined assortment of games developed by individuals or small teams and either self-published or published by independent publishers.

⁴⁹Interview with Amy Hennig.

⁵⁰Manovich, *Software Takes Command*.

- **Ludology** A field of research first proposed by Frasca (following Aarseth) and embraced by numerous games scholars (Juul, Eskelinen, and others). Often (erroneously) pitted against *narratology*; the source of a primary conflict in games studies literature from the late 1990s until the early 2010s.
- **Ludonarrative dissonance** A term attributed to *Far Cry*'s Clint Hocking, who wrote a blog post about the ways in which the violence of *Bioshock*'s gameplay systems ultimately detracted from the game's message.
- **Narratology** A field of study which explores the practice of telling stories.
- **PC Game** A game played on a personal computer. Typically includes cross-platform ports but not ROMs played through virtual environments (VMs).
- **Role-playing game (RPG)** Game (traditional or digital) with variable playstyles based on player choice. Often uses tropes of speculative fiction (i.e. science fiction and fantasy), as seen in series such as *Dragon Age*, *System Shock*, and others. Typical gameplay allows for some degree of choice for the player character, be it through features (appearance), gameplay style (combat, non-combat, strength/melee weapon focused, stealth focused, etc.), through story choice, and more.
- **RTS games** Real-time strategy games Tactical games (often featuring combat) that invite players to build systems and assess movement of actors within those systems. Often, these games feature strict plan views (i.e. top-down) or isometric perspectives. Examples include *SimCity*, *Shogun: Total War*, *Age of Empires*, *Pharaoh & Cleopatra*, *XCOM*, *Stronghold*.
- **Steam Workshop** Built-in mod manager for some Steam titles—allows players to find, rate and share mods through a store-like interface. Not available for all titles, but open to quite a few: e.g. *Fallout*, *Skyrim*, *Civilization V* and *VI*, *Stardew Valley*, and more.

- **System operation** In contrast to a **unit operation**, a system operation is a top-down approach to classification of networks.
- **Tabletop RPG:** (Subset of RPGs) Early RPGs that do not rely on digital media technologies. One well-known example is the game *Dungeons and Dragons*.
- **Turn-based strategy** Tactical games (similar to RTS titles), where players take turns with their actions. Examples include Sid Meier's *Civilization* series, among others
- **Unit operation** A term coined by Ian Bogost in his *Unit Operations* and expanded upon in *Alien Phenomenology*, it describes the act of analyzing objects by way of their component “units.”

Ludography

- *Ace Attorney* (series). Various handheld, console, and mobile platforms. Developed and published by Capcom Co. Ltd., 2001-2016.
- *Age of Empires II: Age of Kings*. Various PC and console platforms. Developed by Ensemble Studios. Published by Microsoft Corporation, 1999.
- *Amnesia: The Dark Descent*. Linux, Mac OS X, and Microsoft Windows. Developed and published by Frictional Games AB, 2010.
- *Amnesia: Justine*. Linux, Mac OS X, and Microsoft Windows. Developed and published by Frictional Games AB, 2011.
- *Amnesia: A Machine for Pigs*. Linux, Mac OS X, and Microsoft Windows. Developed by The Chinese Room Ltd. Published by Frictional Games AB, 2013.
- *Arma 3*. Microsoft Windows. Developed and published by Bohemia Interactive Studio s.r.o., 2011. 2013.
- *Bientôt L'été*. Mac OS X and Microsoft Windows. Developed and published by Tale of Tales BVBA, 2012.
- *Bioshock* (series). Various PC, console, and mobile platforms. Developed by various studios, including 2K Australia Pty. Ltd, 2K Boston, Inc, and Irrational Games (various directors, including Ken Levine and Jordan Thomas). Published by 2K Games, 2007-2016.
- *Block'hood*. Linux, Mac OS X, and Microsoft Windows. Developed and published by Plethora Project LLC (lead designer Jose Sanchez), 2016.
- *Braid*. Various PC and console platforms. Developed by Number None Inc. (lead designer Jonathan Blow). Published by Microsoft Game Studios, 2008.
- *Calvino Noir*. Mac OS X and Microsoft Windows. Developed and published

by Calvino Noir Ltd., 2015.

- *Cleopatra* (Add on to *Pharoah*, 1999). Microsoft Windows. Developed by BreakAway Games Ltd., and Impressions Games. Published by Sierra Online, Inc., 2000.
- *Coke Music/ MyCoke /Coke Studios*. Web. Developed by VML and Sulake. Published by The Coca-Cola Company, 2002-2007.
- *Colossal Cave Adventure/Adventure*. PDP-10. Developed by Will Crowther and Don Woods, 1976.
- *Dance Dance Revolution* (series). Arcade and other platforms. Developed and published by Konami (Bemani), 1998-2016.
- *Dear Esther*. Mac OS X and Microsoft Windows. Developed and published by The Chinese Room (writing by Dan Pinchbeck, art and level design by Robert Briscoe), 2008 (mod release), 2012 (standalone).
- *Doom*. Various PC, console and mobile platforms. Developed and published by id Software, Inc., 1993.
- *Fallout* (series). Various PC, console and mobile platforms. Developed by Interplay/Black Isle Studios, later Bethesda Game Studios. Published by Interplay, later Bethesda Softworks LLC, 1997- present.
- *Far Cry* (series). Various PC and console platforms. Developed by Crytek GmbH, later by Ubisoft Divertissements Inc. Published by Ubisoft Entertainment SA, 2004-2016.
- *Final Fantasy* (series). Various PC and console platforms. Developed and published by Square Enix, Inc. 1987- present.
- *Firewatch*. Linux, Mac OS X, Microsoft Windows, PlayStation 4, and Xbox One. Developed and published by Campo Santo Productions LLC, 2016.
- *Flyff*. Microsoft Windows. Developed by Aeonsoft. Published by Webzen, Inc., 2005- present.
- *Freddi Fish* (series). Various PC and mobile platforms. Developed and published by Humongous Entertainment, Inc., 1994-2013.
- *FTL: Faster than Light*. Linux, Mac OS X, Microsoft Windows, and iOS. Developed and published by Subset Games. 2012.

- *Gaia Online*. Web. Developed and published by Gaia Interactive, Inc., 2003-present.
- *Garry's Mod*. Linux, Mac OS X, Microsoft Windows, PlayStation 4, and Xbox One. Developed by Facepunch Studios Ltd. Published by Valve Corporation, 2004 (mod release), 2006 (standalone).
- *Gone Home*. Linux, Mac OS X, Microsoft Windows, PlayStation 4, and Xbox One. Developed and published by The Fullbright Company LLC, 2013.
- *Habbo Hotel*. Web. Developed and published by Sulake Corporation Oy. 2000-present.
- *Half-Life 2*. Linux, Mac OS X, and Microsoft Windows. Developed by Valve Corporation. Published by Sierra Entertainment, Inc., 2004.
- *Hyper Light Drifter*. Linux, Mac OS X, Microsoft Windows, PlayStation 4, and Xbox One. Developed and published by Heart Machine, 2016.
- *Kidpix*. Macintosh and Microsoft Windows. Published by Brøderbund Software, Inc. 1991.
- *Kingdom Hearts* (series). Various console, mobile and handheld platforms. Developed and published by Square Enix Inc., 2002-present.
- *Kriegspiel*. Web. Developed and published by Radical Software Group (inspired by Guy Debord's *Le Jeu de la Guerre*), 2010.
- *Le Jeu de la Guerre*. Tabletop game. 1987.
- *Legend of Zelda* (series). Various console and handheld platforms. Developed and published by Nintendo. 1986-present.
- *Lego Island* (series). Various PC and handheld platforms. Developed and published by Mindscape, Inc. (*Lego Island 1*), developed by Silicon Dreams Studio Ltd. and published by LEGO Media International, Inc. (*Lego Island 2*), 1997-2001.
- *Lemmings* (series). Various PC, console, and handheld platforms. Originally developed by DMA Design. Published by Psygnosis Limited, 1991.
- *Maplestory*. Microsoft Windows. Developed by Wizet. Published by Nexon America Inc., 2006-present.
- *Might and Magic VII: For Blood and Honor*. Microsoft Windows. Developed

by New World Computing, Inc.. Published by 3DO Company, 1999.

- *Minecraft*. Linux, Mac OS X, and Windows. Developed and published by Mojang AB. 2009 (alpha release), 2011 (full release). [Currently distributed by Microsoft Studios on various platforms, with additional tie-in games developed and published by Telltale, Inc.]
- *Mixed-up Mother Goose*. Various PC platforms. Developed and published by Sierra On-Line, Inc., 1991.
- *Monkey Island* (series). Various PC, console, and mobile platforms. Developed and published by LucasArts (lead designer Ron Gilbert), 1990-2000.
- *Monument Valley*. iOS, Android and Windows Mobile. Developed and published by Ustwo studio, Ltd., 2015.
- *MUD1*. Platform independent. Developed and published by Roy Trubshaw and Richard Bartle, 1978.
- *Myst*. Various PC, console, handheld and mobile platforms. Developed by Cyan, Inc. (lead developers Rand and Robyn Miller). Published by Brøderbund Software, Inc., 1993.
- *Neopets*. Web. Developed and published by Neopets, Inc., 1997- present.
- *Oregon Trail Deluxe*. Macintosh and Microsoft Windows. Developed by MECC. Published by SoftKey Multimedia Inc., 1992.
- *Pajama Sam* (series). Various PC and mobile platforms. Developed and published by Humongous Entertainment, Inc., 1996-2003.
- *Pharoah*. Microsoft Windows. Developed by BreakAway Games Ltd., and Impressions Games. Published by Sierra On-Line, Inc., 1999.
- *Pokémon* (series). Various console and handheld platforms. Developed by Game Freak (lead designer Satoshi Tajiri). 1996- present)
- *Portal*. Linux, Mac OS X, Microsoft Windows. Developed and published by Valve Corporation, 2007.
- *Portal 2*. Linux, Mac OS X, Microsoft Windows, PlayStation 3, and Xbox 360. Developed and published by Valve Corporation, 2011.
- *Putt-Putt* (series). Various PC and mobile platforms. Developed and published by Humongous Entertainment, Inc., 1992-2003.

- *Qin: Tomb of the Middle Kingdom*. Mac OS X and Microsoft Windows. Developed by Haemimont Games AD. Published by SouthPeak Interactive, LLC, 1995.
- *Quadrilateral Cowboy*. Linux, Mac OS X, Microsoft Windows, PlayStation 4, and Xbox One. Developed and published by Blendo Games LLC (lead designer Brendon Chung), 2016.
- *Second Life*. Linux, Mac OS X, Microsoft Windows. Developed and published by Linden Research Inc., 2003- present.
- *Sid Meier's Civilization* (series). Various PC and console platforms. Various developers (lead designer Sid Meier). Various publishers. 1991-2016.
- *SimCity 2000*. Various PC, console, handheld and mobile platforms. Developed and published by Maxis Software Inc. (lead designer Will Wright), 1993.
- *SimCity*. Various PC, console, handheld and mobile platforms. Developed and published by Maxis Software Inc. (lead designer Will Wright), 1989.
- *Sleep is Death* (Geisterfahrer). Linux, Mac OS X and Microsoft Windows. Developed and published by Jason Rohrer, 2010.
- *Spy Fox* (series). Various PC and mobile platforms. Developed and published by Humongous Entertainment, Inc., 1997-2001.
- *Stardew Valley*. Linux, Mac OS X, Microsoft Windows, PlayStation 4, and Xbox One. Developed by ConcernedApe (Eric Barone). Published by Chucklefish Ltd., 2016.
- *Stronghold*. Mac OS X and Microsoft Windows. Developed by Firefly Studios. Published by Take-Two Interactive, 2001.
- *Stronghold: Crusader*. Microsoft Windows. Developed by Firefly Studios. Published by Take-Two Interactive, 2002.
- *Team Fortress 2*. Linux, Mac OS X, Microsoft Windows, PlayStation 3, and Xbox 360. Developed and published by Valve Corporation, 2007.
- *Tetris*. Alexey Pajitnov, 1984.
- *The Beginner's Guide*. Linux, Mac OS X and Microsoft Windows. Developed and published by Everything Unlimited Ltd. (lead designer Davey Wreden), 2015.

- *The Elder Scrolls* (series). Various PC and console platforms. Developed and published by Bethesda Softworks LLC, 1994-2017.
- *The Sims Online*. Microsoft Windows. Developed by Maxis Software Inc. Published by Electronic Arts, Inc., 2002.
- *The Sims*. Linux, Mac OS X, Microsoft Windows, Gamecube, PlayStation 2, and Xbox. Developed by Maxis Software Inc. Published by Electronic Arts, Inc., 2000.
- *The Stanley Parable*. Linux, Mac OS X and Microsoft Windows. Developed and published by Galactic Cafe (lead designer Davey Wreden), 2011 (mod release), 2013 (standalone).
- *The Witness*. Mac OS X, Microsoft Windows and PlayStation 4. Developed and published by Thekla, Inc. (lead designer Jonathan Blow), 2016.
- *Thirty Flights of Loving*. Linux, Mac OS X, Microsoft Windows, PlayStation 4, and Xbox One. Developed and published by Blendo Games LLC (lead designer Brendon Chung), 2013.
- *Toontown Online*. Mac OS X and Microsoft Windows. Developed and published by Disney Interactive, Inc., 2003-2013.
- *Total War*(series). Linux, Mac OS X and Microsoft Windows. Various developers and publishers, 2000-2016.
- *Tuneland*. Microsoft Windows. Developed and published by 7th Level, 1993.
- *Uncharted* (series). PlayStation 3 and PlayStation 4. Developed by Naughty Dog. Published by Sony Interactive Entertainment, 2007- present.
- *Undertale*. Linux, Mac OS X and Microsoft Windows. Developed and published by Toby Fox, 2015.
- *Virtual Magic Kingdom*. / VMK. Web. Developed by Sulake. Published by Disney Interactive Studios, 2005-2008.
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- *World of Warcraft*. Mac OS X and Microsoft Windows. Developed and published by Blizzard Entertainment, 2004- present.
- *XCOM* (series). Various PC platforms. Various developers and publishers,

1991-2016.

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