Introduction

Andri Gerber and Ulrich Götz

> "The decisive question of how a free human being—the homo ludens—will live his or her life cannot be adequately answered until an idea about the artificial world is formulated—the world that these humans will build when they are not required to work."
> Constant, 1964[1]

Introduction Level One: Press Architecture to Start

Let us begin with something that might sound far-fetched: the children's book *King Nutcracker and Poor Reinhold*, by Heinrich Hoffmann.[2] In this story, a poor, sick boy is visited by an angel on Christmas Eve. The angel leads the boy away from his home, into a room with a small box full of wooden building blocks. Reinhold takes the blocks out of the box; after stacking them with the church in the center of his city, the blocks began to grow until they surrounded him—toy buildings that became "real." In this fantastic city, Reinhold encounters a series of strange and unusual inhabitants, including a king who introduces the boy to his subjects.

Later, the angel takes Reinhold back and announces that "the game is over." Upon returning home, he falls asleep—and when he wakes up next

1 | Constant Nieuwenhuys, New-Babylon: imaginäre Stadtlandschaften (Krefeld: Scherpe, 1964).

2 | Heinrich Hoffmann, *König Nussknacker und der arme Reinhold* (Frankfurt am Main: Literarische Anstalt Rütten & Löning, 1851). Hoffmann was psychiatrist and children's author, and the creator of the famous character of Struwwelpeter.

morning, he discovers a wonderful Christmas tree, alongside the toys he had played with the night before.

Play opens the door to fantasy and illusion. The etymology of "illusion" originates from the Latin *in-ludere*, referring to "play". Games demand illusion: we either play with the image of a game in our minds—like the German expression *Gedankenspiel*—or by literally jumping *into* the game. While at first, the Heinrich Hoffmann example may seem off-topic, it illustrates the agenda of this book: It reminds us that play, in fact, has a long history, and by playing, we are transported into the world of games. This world is always related to our everyday reality—and yet it is of another dimension, in which a different set of rules, perhaps better or fewer ones, take control.

Fig. 1: Hoffmann, Heinrich, König Nussknacker und der arme Reinhold, 1851

Architecture defines spaces, which unfold before us and envelop us. Architecture is a complex discipline, yet also one of the most "solid" disciplines ever, as its results manifest themselves in bricks and mortar. At the same time, architecture has always been plagued by contradictions and crises—the resulting instability of it all is a wonderful paradox indeed. Because of this fundamental condition, architecture has always been open to external discourses, embracing new directions and definitions in search of its own nature—as it has never been able to answer this central ques-

tion on its own. Since architecture primarily expresses itself in the form of spatial structures, it has always had to share concepts of "space" with related interpretations from other disciplines, and in a complex entanglement with society. From movies to literature, philosophy, technology, sciences, politics, the military, economics, even music—all have made seminal contributions to the evolution of architecture and its discourses, often shifting the focus from purely architectural questions to hybrid applications.

Yet some of these interdisciplinary shifts may have served as more of an escapist movement than an actual attempt to translate the findings back into architectural designs. In contrast, other strategies tend to explain architecture *through* architecture, which often results in sterile, self-reflecting monuments—almost like architectural mirrors. These tendencies lead either to a condition of heteronomy that removes architecture from its foundations, or to a state of autonomy, making genuine communication with society equally impossible.[3]

As a consequence, architecture has created various forms of "utopia": playgrounds of both the introverted and extroverted, fantastic possibilities, all of which avoid a true confrontation with reality. By its own nature, architecture has a longstanding tradition of creating virtual spaces, of searching for its own forms of virtuality—particularly within the design process itself. Even though, in many ways, architecture was the precursor of digital metaphors (such as networks, clouds, or flows), its referential qualities remain. Architecture has always had virtual doubles—spatial structures in disguise.

On one hand, these doppelgangers served to blur the concept of architecture itself; on the other, they helped to better understand it. Because of this complex condition, we decided to borrow Immanuel Kants term *architectonics* for this book. Kant presented the phenomenon of an "impossibility of architecture" in his *Critique of Pure Reason* (1781), naming this "architectonics": in order to fulfill all criteria of architecture, it would have to be designed, planned, and built at the same time—which is, of course, impossible. According to Kant, this impossibility of existing while simultaneously being created will never result in *architecture,* but rather, in *ruins* and *failure*. This definition of architectonics therefore refers to

3 | Italian architectural historian Manfredo Tafuri named these two poles "labyrinth" and "sphere." Manfredo Tafuri, *Teorie e storia dell'architettura* (Bari: Laterza, 1968).

architecture as a system, which Kant uses to reflect upon philosophy. In this book, we use it to reflect upon architecture in games.

This line of inquiry is urgent, because over the past several decades, yet another counterpart to architecture has emerged, one which constantly comments on the venerable discipline: video games. They have vastly extended the references of spatial design, enriching the discussion with powerful simulations of environments in general, and of architecture in particular. Architecture has always been closely linked to the production of fantastic imagery, transferring traditional forms of virtuality (drawings, books, movies, etc.) into the constructed spaces of reality. The virtual spaces of games have to be designed, constructed, narrated, and filled with action—much in the way that architects attempt to anticipate how its occupants will appropriate architecture. If reality is a construction—and architecture is part of it—then the virtual spaces of games can teach us about architecture, and the role it plays in and for society.

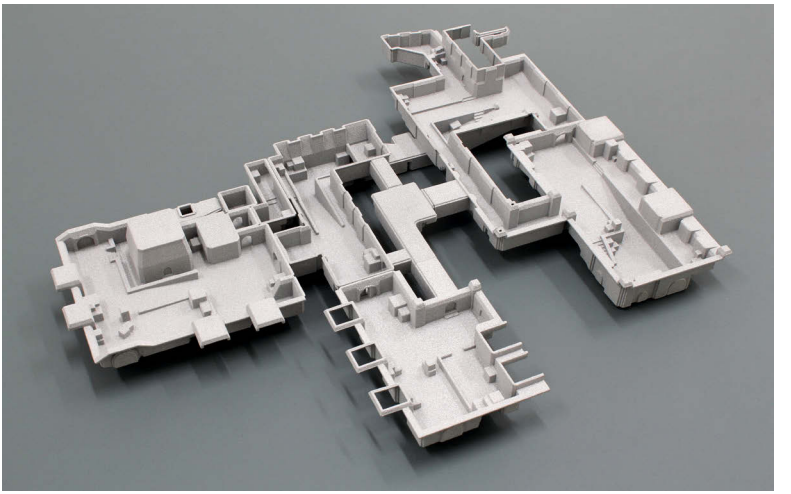
Games reproduce portions of the world and define the framework that governs them. This also includes the rules for the construction and design of such worlds. This book discusses the "architectonics of game spaces," grounded in the understanding of architecture as an unstable discipline, one which cannot be reduced to mere structural design. Architecture transforms into duplicates, enters a game space, and—from this position—reverberates back into architecture.

Introduction Level Two: Main Quests and Side Quests

These transitions and processes are not smooth at all. Cross-media artist Aram Bartholl (*1972) exploits the tension of this topic by using elements of video games that originated in "reality" and translating them back into "reality." In his project *DUST* (2011), Bartholl identified level design elements from the user-generated map *Dust* (by David Johnston) of *Counter-Strike* (1999), and planned to build it in reality. The functional design for a game, made out of virtual materials, was to appear in "reality," as a concrete construction!

While working on this book, we identified different ways in which games reflect reality in their designs. Interestingly, similar categories can be detected in the utopian projects of architecture and urban design.

Fig. 2: Aram Bartholl, DUST, 2011



First, there is nostalgia, in which the narratives of games refer to alleged better, or older, worlds. Second, games serve as socio-analytical, critical, or subversive commentary. Of course, in most productions, both of these positions mix and cannot be strictly separated. However, we found that the work of Johan Huizinga (1872-1945) and Roger Caillois (1913-1978), the famous meta-theorists of game and play, could be distinguished from these two positions. Huizinga was a historian, with a background in linguistics. His major work, *Herfsttij der Middeleeuwen* (1919), describes the society of the Middle Ages; in it, he claims that people were closer to "things" and "reality" back then than they are now—for example, in the way children relate to their environment through play.[4] Caillois, on the other hand, was influenced by avant-garde movements such as the Surrealists, for whom artistic practice, play, and games played a pivotal role (e.g. in the *cadavre*

4 | "To the world when it was half a thousand years younger, the outlines of all things seemed more clearly marked than to us. The contrast between suffering and joy, between adversity and happiness, appeared more striking. All experience had yet to the minds of men the directness and absoluteness of the pleasure and pain of child-life." Johan Huizinga, *The Waning of the Middle Ages. A Study of the Form of Life, Thought and Art in France and the Netherlands in the XIVth and XVth centuries* (New York: Doubleday Anchor Books, 1954[1919]), p. 9.

exquis game).[5] Callois' approach to play reflects questions of and subversions of reality.

In *Architectonics of Game Spaces*, we want to demonstrate that discussing architecture from the perspective of video games leads to entirely different frameworks than the architectonic references from other disciplines. Much can be learned from the interrelated, yet diverse strategies of designing space for architecture and video games. We postulate that an understanding of design processes in virtual worlds, as well as the act of playing games themselves, could become an important asset for architectural education. Also, designing and experiencing virtual spaces with virtual reality (VR) devices permits an empirical investigation into the perception and impact such designs have on users—the kind of knowledge that could be fed back into architecture. Similar insight can also be gained from applying lessons from architecture and urban design to video games.

The designs of games often refer to designs from the real world. Creating such virtual "doubles" implies a thorough understanding and selection of circumstances, parameters, and rules, derived from the real and implemented in the virtual. Just imagine how the design of in-game fortresses would upset Francesco di Giorgio Martini (1439-1501), a pioneer military architect! (It might be of special interest to gamers that in his *Trattato di architettura civile e militare* (ca. 1478-1481), di Giorgio Martini not only described the construction of a secure stronghold, but also where to place explosives for their most effective destruction.)

On a more serious note, the transposition of buildings or scenery into the virtual, and the consequent distortions required to make them fit their new game purposes, is a highly interesting topic in and of itself. Ubisoft's version of Florence during the Renaissance, recreated for *Assassin's Creed II* (2009), perfectly illustrates typical *Architectonics of Game Spaces*. The virtual replica of the historic city is stunning, while at the same time major differences to the original emerge: the plan of Renaissance Florence was determined by the roman castrum, subsequent urban planning, and, finally, by the collapse of these structures during the Middle Ages. There-

5 | A game introduced by the Surrealists, in which a paper is folded many times and each participant adds a written or drawn element without knowing the contributions of the other players. The result is an often hilarious and absurd text or drawing.

fore, today's city map of Florence reveals a vague orthogonal city structure, overwritten by irregularities. However, the map of the video game postulates a spatial logic of its own, since it primarily consists of curved streets, to suit the typical movement of the assassin and enhancing a spatial experience. Even though most Renaissance buildings were low-rise, Assassin's Creed II features many buildings with more than two levels in order to facilitate the main character's climbing actions. In this case, form does follow function—but it is reality adapted to the necessities of the game. María Elisa Navarro, a professor of architectural history and theory who acted as consultant during the development of the game, explains that "each decision to deviate from historical accuracy was always done with some part of the game in mind".[6]

Architecture, urban design, and landscape design have always been closely linked to their economic feasibility—despite all attempts to ignore this evidence. Considering the budgets of many video games, there is hardly any danger of accidentally overlooking the economic aspects of their development, and the impact their financing has on the act of play. While the often simple imperialistic narratives of games focusing on economic game mechanics are evident[7], games can also question and rethink economic, political, or other normative circumstances. The Greek economist Yanis Varoufakis (*1961) was once asked by *Valve Corporation* to analyze economic systems in multiplayer games. In his words, it was "a dream come true for an economist." He said: "It's like being God, who has access to everything and to what every member of the social economy is doing".[8] Current practices in architecture and urban design are being invaded by the belief in algorithms and statistics, by *BIM*—Building Information Modeling—and *Smart Cities*—development models based on data and

6 | Maria Elísa Novaro, "What It's Like to Be an Architectural Consultant for Assassin's Creed II," interview by Manuel Saga, translated by Matthew Valata (October 7, 2015), https://www.archdaily.com/774210/maria-elisa-navarro-the-architectural-consultant-for-assassins-creed-ii (accessed July 7, 2019).

7 | See for example: Nick Dyer-Whiteford and Greig de Peuter, *Games of Empire: Global Capitalism and Video Games* (Minneapolis: University of Minnesota Press, 2009).

8 | Peter Suderman, "A Multiplayer Game Environment Is Actually a Dream Come true for an Economist" (June 2014), https://reason.com/archives/2014/05/07/a-multiplayer-game-environment (accessed July 7, 2019).

statistics, which are supposed to allow cities to become more inclusive and sustainable. Such approaches promise all kinds of problem-free spaces, but will eventually lead to cities of boredom. In contrast, playing with data might be a way to escape this bureaucratic, data-fanatic, and perfect future (see the contribution of James Delaney and Luke Pearson in this book)! Architecture and urban design can be so much more than mere functionalist calculations. The goal of architecture and urban design is not to accommodate society, but to express its inherent flaws, tension, and frictions; and to help ease these problems.

Fig. 3: Red Bull Air Drop at the entrance to Zurich University of the Arts, 2018

Games have developed the capacity to express such tensions, and to translate them back into "reality." Players of *Pokémon GO* (2016), a game which enhances public spaces with augmented reality objects, are warned when starting the game: "Do not trespass while playing Pokémon GO." The game's territory suggests a continuous playing ground, as buildings are not represented in a borderless game space. This concept sometimes results in awkward situations, when shops or cafés have positioned themselves in the public spaces, where players summon in "game-arenas". In

such cases, virtual objects actually have an impact on the real spaces of cities, revealing the ongoing conflicts between public spaces and spaces of trade and commerce. An even further twist might be represented by the university campus marketing campaign by the Red Bull Company, in which crates of product samples were placed as obstacles in universities' entrances, which they referred to as "Red Bull Air Drops." To most students, the references to multiplayer games like *PlayerUnknown's Battlegrounds* (2017) or *Fortnite* (2017) were evident in the "air drops"—extra resources distributed by parachute. Despite the aforementioned warnings, trespassing does occur—from virtuality to reality, and vice versa.

Introduction Level Three: A User Manual

The publication *Space Time Play*[9] provided an extensive selection of articles in 2007 addressing the relationship between architecture and video games, and they remain a valid reference today. Since then, publications on this topic tended to discuss specific details, rather than providing broad-based access to the topic. For this reason, we felt it was necessary to present a wide-ranging selection of interviews and essays anew, delineating the state-of-the-art on the many perspectives and aspects of today's interlinked practices in architecture and video game design.

Architectonics of Game Spaces was written for architects and architectural students interested in video games, and in utilizing them for their own architectural practice. Many authors of this book provide excellent examples of how to take this step. Also, the publication is intended for game designers and game design students who actively explore the design possibilities between real and virtual spaces. The book is divided into two sections: the first part contains interviews, and the second part contains essays. Both tackle the relationship between architecture and games, between "reality" and "fiction," between "actuality" and "virtuality." *Architectonics of Game Spaces* continues the discussion of the conference *The Architectonics of Virtual Spaces*, which was held on June 9, 2018 at the Werner Oechslin Library Foundation in Einsiedeln, Switzerland.

9 | Friedrich von Borries, Steffen P. Walz, and Matthias Böttger (eds.), *Space Time Play. Computer Games, Architecture and Urbanism: The Next Level* (Basel/Boston/Berlin: Birkhäuser, 2007).

Fig. 4: Conference on The Architectonics of Virtual Spaces, Werner Oechslin Library, Einsiedeln, June 9, 2018

Interviews

In a series of interviews, experts from different fields provide an overview of the role architecture plays in their practice. Among these interviewees, Paolo Pedercini, Konstantinos Dimopoulos and Francine Rotzetter are experts on gaming. The remaining interviewees are not directly involved in the practice of developing games, but they are interested in questions of virtuality and in contributing new perspectives to game theory.

It may be hard to imagine **Werner Oechslin** gaming away on a PlayStation. As a former professor of the history and theory of architecture, long-time head of the gta institute at the ETH Zurich, and founder of the *Bibliothek Werner Oechslin*, he is one of the few truly universal scholars of our time. Amid the stunning collection of architectural and non-architectural books in his library (a building by Mario Botta, *1943), one might think him far removed from engaging with topics such as game and play. Yet, as his interview reveals, he has great interest in such activities: he understands them as possibilities with which to approach knowledge that is inductive, not deductive. Referring to historical examples, such as *aenigma* and *verisimilia,* and emphasizing the role of fiction and poetry, he argues for a more playful approach to science and culture in general. To his un-

derstanding, the main lesson we should learn from games is that playing always implies taking risks; in a society obsessed with security norms, we should learn to take more risks!

Paolo Pedercini distributes the games he designs under the label *Molleindustria*. His productions are great examples of how games can be used to critically assess society, culture, and politics. Pedercini claims that his games are instruments for a critique of power, and that they can help the player become aware of the forces to which he is subjected. Pedercini makes an interesting analogy between the relationship of the human scale in architecture to the time spent in video games. He likes to compare the relation of a gamer and in-game architecture to someone using skateparks or doing parkour. When asked about his architectural references, surprisingly, he does not cite history books, but immersive art installations and the pedagogical (and really funny) *101 Things I Learned In Architecture School* (2007) instead.

Konstantinos Dimopoulos was originally trained as a surveyor, and as an urban and regional planner in geography. But a long time ago, he transposed his knowledge about real cities and landscapes to virtual spaces, not missing "corruption, red tape, and maddening officials" at all. He recently published *The Virtual Cities Atlas*, a collection of virtual cities from games, in which he affords them a quasi-real status. Having worked in the field, he argues for the creation of in-world realism, which—related to J.R.R. Tolkien's (1892-1973) idea of a second reality—should be defined by imagination, character, and believability. Furthermore, he advocates the need to admit history and time a more relevant role in games.

Johannes Binotto is a media and culture theorist, who lives in a spatial multiverse ranging from cinema to architecture. Discussing video games in relation to film, he emphasizes the differences between the media of "film" and "video," and what this distinction means for games. From his perspective, the relationship between architects and media artists or game designers leads to an interesting chiasm: whereas the former envy the possibilities of manipulating reality, the latter envy the "reality" of architecture. Binotto's dream would be a boring game, with only subtle differences to reality, moving the game closer towards film. He would love

to play such a game, against its own rules, just exploring its space—yet aware that he probably would be the only one enjoying it.

Silke Steets is not a gamer, but when she played tennis on *wii*, she was surprised about her sore muscles the day after. As a sociologist, she has investigated architectural objects as "social realities." This led her to focus on the spaces of games, their architecture, and their impact on reality (as in sore muscles). Steets describes the relationship of game spaces and architecture in terms of signs and symbols, but also through their spatial experience, which she compares to the layout of the English landscape garden or to skating (like Paolo Pedercini). As a sociologist, she explains how the sphere of everyday life and the sphere of games are always connected, even though this relationship is not always evident.

Philipp Schaerer is a master in manipulating imagery. Having previously worked as an architect to create architectural renderings, he later decided to subvert this kind of production by questioning the means generating these images. While at first sight, the results appear to be conventional architectural images and renderings, really they show to what extent 3D renderings have established a culture of copy-paste. His images are both a strong criticism on the processes of designing architecture in a digital and capitalist era, and they also remind us of the decisive influences of tools in design practice. His approach is strongly oriented towards practice, yet his images emit a seductive aura and open a door to visions of a different kind of architecture. If only Schaerer could someday be involved in the development of a video game…

After studying architecture at the ETH Zurich, **Francine Rotzetter** enrolled in the master's program in game design at the Zurich University of the Arts. Currently, she is working with VR experiences in architectural visualizations. Trained as an architect, she is aware of the specific knowledge necessary for the development of virtual and game spaces: the emotional dimension of space. She admits to having learned a lot about architecture through her work and research on video games, for example, the meticulous consideration of a future user's actions—a practice she found strongly underrepresented in the study of architecture. Her background as an architect and a game designer allows her to obtain deep insight into both disciplines, and also to identify typical mistakes. During her inter-

view, we discussed a proposal to open up the creation of virtual cities to architects and urban planners, unfolding "sandbox" environments to mirror the complexity of reality in virtuality.

François Charbonnet and **Patrick Heiz** are architects who tackle norms and conventions in their daily work and teaching. As they stress in their interview, this does not imply leaving reality, but to question the rules that define it. Since architecture should also be unpredictable and fun, this includes the method of copying, with all its inadequacies and chaotic side effects. In teaching, they introduced the concept of *Voluptas*—literally, pleasure or delight—to show students how to overcome expectations and norms, or to go beyond them. For educational use, as an architectural "sandbox," they are developing a game platform that helps to convey the dynamic energy of fantastic and imaginary worlds. In the same way that their architecture is not a retreat into virtuality, but another way to confront reality, the game platform trains students to question their work and responsibility for future designs.

Essays

The essays cover three aspects of *Architectonics of Game Spaces*—although this distinction is not meant to be considered exclusive, but rather, overlapping. The three topics are:

1. *Towards a Definition of Game Space,*
2. *Spatial Transitions Between Architecture and Games,* and
3. *The Potential of Game Space for a New Architecture.*

Part 1. Towards a Definition of Game Space

The first section approaches a definition of "space" in video games and architecture. In attempting to include a philosophical dimension of this question, the discussion is aware of the heated debate about the definition of "space" in the history of architecture.

In his essay, **Andri Gerber** presents a range of personalities who, at first sight, seem to be far removed from the context of video games: Reyner

Banham (1922-1988), Immanuel Kant, Humphry Repton (1752-1818), and Le Corbusier (1887-1965). He uses these thinkers to reflect on the understanding of architecture and its space, and how games can be discussed from this perspective as a counterpart. He outlines the concept of "architectonics," and how this term applies even more to landscape architecture than to the architecture of buildings. He suggests how video games could help architects to improve certain skills, such as their spatial ability.

Stefano Gualeni, an architect and philosopher who both teaches game theory and designs games by himself, discusses the experience of virtual spaces and the dissatisfaction that can be induced by their limitations. Games are believed to trigger the experience of "flow," or a sometimes, "sublime emotion"—but Gualeni instead discusses the feeling of "weariness" that also can overcome a player. Through interviews with experts, he identifies strategies delaying what he calls the "experiential erosion of digital environments." He warns against using virtual worlds as an escape from the flaws and incompleteness of the real world; simultaneously, the acceptance of limitations in virtual worlds can be essential to cope with life in the real.

Stephan Günzel, a philosopher, media theorist and expert of the history of space theories, approaches the topic of space by referring to Henri Lefebvre (1901-1991) and the concept of "thirdspace" developed by Edward Soja (1940-2015). In doing so, he is not aligned with other game theorists, who define game space as an allegory or metaphor of "real" space. Günzel shifts the perspective of such spaces from "what or where are they?" to "how are they made"? He successfully demonstrates how mathematical and physical concepts of space are a cultural and subjective expression. From this viewpoint, video games appear to create privileged conditions, which explicate the various means constituting the construction of space over the course of history.

Constantinos Miltiadis, an architect with a broad experience in teaching and researching video games, reflects on spatial concepts from the perspective of mathematics and physics. However, he suggests overcoming these fundamentals through video games and VR devices. While the laws of reality are determined by physical axioms, he questions if it would be

possible to experience alternative forms of space, such as in games like *Portal* (2007) or *Antichamber* (2013). Miltiadis points out how such spatial conceptions are determined by the tools used in game productions. Transferring such methods to the context of architecture would introduce a new understanding of space into reality.

Part 2. Spatial Transitions Between Architecture and Games

Constantinos Miltiadis's essay leads to the second section—dedicated to the investigation of the transcending qualities of space, from architecture to game spaces and vice versa. What is the understanding of space in each discipline, and which results can be expected when they connect and exchange?

Ulrich Götz heads the subject area of game design at the Zurich University of the Arts (ZHdK). Trained as an architect, he discusses comparable strategies of spatial design in architecture and game spaces in his research and teaching. In his contribution, he argues that common references between architecture and game design are based on mutual misjudgments of the other discipline. He explains how a lack of deeper understanding of architecture (from the perspective of game designers) and of game spaces (from the perspective of architects) is precisely what leads to the spatial constructions that lack architectural qualities in virtual spaces, and that fail to make proper use of the virtual world's possibilities in real space.

In his essay, **Marc Bonner**, an art historian and media theorist, focuses on the video games *Hitman* (2012) and *Hitman 2* (2016) to illustrate the role of architecture as "medial hinge": he defines architecture as a medium within a medium, influencing our perception and experience in real and in virtual space. The space of games is described as "architectural possibilism" through two overlapping architectonic concepts of space and movement: the *promenade architecturale* by Le Corbusier and the enfilade of the *hôtel particulier*. He claims that architectonic concepts are translated into game space, in which they are adapted and transformed into specific narration and rules.

Sinem Cukurlu is an architect with a passion for video games. In her essay, she reflects upon qualities of architectural space in reality and in games;

she discusses the tools used to convey materiality, light, space, perspective, environment, shape, and form, much like ambassadors between the two disciplines. She emphasizes the proximity of the two disciplines and how architects can profit from both, be it by implementing typical game design methods (such as play testing or simulations), or by implementing qualities of virtual worlds into the real (like emotive spaces). In her eyes, games are powerful tools and environments with which to free the creative potential of architects.

Margarete Jahrmann is a "practical theorist" active in game design and as such she brings in a different perspective on the matter discussed in this book. She playfully investigates the relationship between spatial perception and computer games through games and installations, making reference to a whole set of similar artistic projects that bring together different spatial dimensions, be it on stage, in games or in "reality". Together with Max Moswitzer, she publishes the *Ludic Society Magazine*, a ludic arts research journal on playful methods in artistic research. The center of her article discusses the concept of "flow" as the key to understand the relationship of reality, virtual reality and game space.

Part 3. The Potential of Game Spaces for a New Architecture

The third section is dedicated to the potential video games have for architecture and urban design, to their social and political dimension. All essays agree on the potential of games to not only constitute new communication, but also to open up new ways a community can actively participate in shaping their environment.

After studying and working as an architect, **Ekim Tan** was drawn to serious games through her Ph.D. at the Delft University of Technology—titled *Negotiation and Design for the Self-organizing City: Gaming as a Method for Urban Design*—as well as by establishing her own company, *Play the City*, in 2008. Her essay addresses the advantages of using games in the context of urban design, and what they can teach communities. She suggests that games can be used to facilitate complex urban development processes on all scales (such as quality public space, urban safeties, sustainability, etc.) and in which both the stakeholders as well as other participants can better understand the processes. To enhance better communication and

collaboration, Tan refers to the analog game of *Dungeon & Dragons* (1974), and proposes the idea of "hybrid games," combining analog and digital platforms and data.

James Delaney trained as an architect but was also involved in exploiting the architectonical potential of *Minecraft* (2009) early on, with his company *BlockWorks*. He participated in the *Block by Block Foundation*, a partnership between UN-Habitat, Mojang, and Microsoft. His essay explains what makes *Minecraft* so successful as a participatory tool, combining social networks and the interactivity of a virtual environment; and moreover, for teaching CAD basics to laypeople all over the world. From Delaney's perspective, *Minecraft* provides a democratic platform for all stakeholders, particularly those who usually are excluded in planning processes.

Luke Caspar Pearson is an architect investigating the potential of video games and their aesthetics for architecture and urban design, both in teaching and in his practice *You+Pea*. In this, games are understood and researched as didactic tools, as medium, and as cultural artifacts. Linked to examples from architectural history, the use of video games features a more quantitative approach, allowing him to propose alternatives to the current computational trends in architecture. He shows that video games are powerful tools to rethink architecture and to critically assess the future of cities.

Introduction Level Four: Let's Play, Scores, and Credits

To better understand the logic and making of games, the least you can do is to actually play them (how else would you be able to discuss them?). The libraries of architectural universities should be equipped with gaming computers and consoles; seminars about game design should be included in architectural curricula. But of course, if you want to go beyond the experience of play and fully understand the nature of games, you will need to go a step further and develop games yourself.

In this sense, *Architectonics of Game Spaces* is not about "learning from games," but about "learning by playing." We would agree that the potential of games has not yet received the attention it deserves in academia, where

they often remain perceived as a mere amusement. But the impact of games is so powerful precisely because they are so underestimated.

We would like to express our gratitude to the authors who accepted following us in this endeavor, sharing deep insight into their practices in architecture and game design. We would also like to thank those responsible for making this book possible: Oya Atalay Franck, Head of the ZHAW's School of Architecture, Design and Civil Engineering; as well as Stefan Kurath and Regula Iseli, co-heads of the ZHAW's Institute of Urban Landscape (IUL). Furthermore, we would like to express our gratitude to Amadeo Sarbach, Philippe Koch, and Maxime Zaugg for helping us conduct the conference on *The Architectonics of Virtual Spaces*, which evolved into this book. Last but not least, we would like to thank all the colleagues at the ZHAW and the ZHdK for providing us with an environment, in which ideas and controversies about real and virtual spaces can grow. Many thanks also to Lindsay Blair Howe for giving our game-like use of the English language a more serious touch.

Writing this book was a truly playful experience indeed. We hope that our readers will perceive the result as a toy that can be used both for playing and learning!

Andri Gerber and Ulrich Götz, July 2019