

Marc Bonner (Ed.)

Game | World | Architectonics

Transdisciplinary Approaches on Structures and Mechanics,
Levels and Spaces, Aesthetics and Perception



HEIDELBERG
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Introduction

Prospect onto the Architectonics of Computer Games and their World Properties

Marc Bonner

This anthology comprises written versions as well as extended case studies of talks from the international two-day workshop “Architectonics of Game Worlds—On Aesthetics and Mechanics, Spaces and Places, Rhythms and Philosophies” at the University of Cologne in March 2019. The contributors do not only come from across Europe but also cover diverse research disciplines through their respective professions. To name numerous and yet not all disciplines, the workshop welcomed presenters of Media and Game Studies to History of Art, Cultural Studies and Public History to Literary Studies, Philosophy and Sound Studies to Aesthetics and Design Studies, Architecture and Game Design. It was a compelling challenge of the workshop and the anthology at hand to bundle the versatile approaches around the topics of space, architecture, perception of and worldbuilding in computer games and their media-specific properties. Thus, the authors focus on digital game worlds by providing a diverse corpus of chapters, ranging from fundamental theoretical research as well as case studies and close readings. In such a way, they depart from the beaten tracks of media and game studies, focusing on spatial, architectural and world-shaped phenomena within current digital media culture. The book is then not only suited for game, media, and culture scholars but also extends discourses of adjacent disciplines with new findings and additional aspects.

In its current digital, pictorial, and viral ubiquity, architecture no longer has to be bodily present, but “it always has a mediating role instead of being the end itself” (Pallasmaa 2011, 100). Wolfgang Sonne, among others, states that architecture only fully exists together with the images, pictures, graphics, renderings, models, and all the other types and formats of mediating or representing it (2011, 7). In particular, the enactment of architecture and the perception of three-dimensional game spaces are tightly interwoven, as performative interaction within non-linear environments and spatial involvement is crucial. This anthology then starts with the finding that

architecture has to be understood as *medial hinge* (see Bonner 2015a; 2015b; 2019). This stance loosely refers to Hans Hollein's postulate that everything is architecture (1968). Architecture then has to be understood anew in its medial possibilities and how it can mediate and regulate the environment to the observer by enabling new spheres of action. It is a predominant means ("Agens") of understanding and perceiving reality, as well as the fictional worlds of mass media: Architecture as the all-encompassing medium "has always fictionalised reality and culture through turning human settings into images and metaphors of idealised order and life, into fictionalised architectural narratives" (Pallasmaa 2011, 19). In the narrower sense of this anthology, it also refers to the corresponding *architectonics* of built reality and digital game worlds: as a *medial hinge*, architecture merges different disciplines of media and art with the realm of the everyday, folding them onto each other and enabling them to encapsulate one another (see Bonner 2015a, 2015b, 2019 and the chapter in this book).

From this vantage point, the idea of *architectonics* can be understood as the architectural implications of computer games to address the matter of (1) architecture *in* game worlds in the sense of its media-specific spatialisation, structural topoi, architectural layouts, and the (ambient) role of architecture, as well as (2) the architecture *of* computer games themselves in the sense of systematics, structures, and media-specific logics as well as logistics between multiple algorithms, databases, and their audiovisual staging of game worlds to be performed on the screen. Lev Manovich describes this process as the *transcoding* between the "cultural layer" and the "computer layer" (2002, 45–46) while Frieder Nake compellingly demonstrates the double constitution of the digital image divided into the "surface" ("Oberfläche") and the "subface" ("Unterfläche") (2005, 44–48; 2008, 104–106) with the example of Ivan Sutherland's first graphic software *Sketchpad* (1962). With the ever bigger and more complex game environments of today's computer games, algorithms merely compute fragments of the game world and its buildings in order to fill the field of view of the virtual camera. Multiple techniques are at work to stage an audiovisually seamless game space and thus a coherent world.

Algorithms then are the infrastructure or framework of the *architectonics* specific to computer games, and *architectonics* refer to the fragmental and processual state of an ever-changing navigable, three-dimensional but immaterial structure and all filters, effects, data, and objects allocated to it. Juhani Pallasmaa defines architecture as a world-regulating medium which organises and governs humankind's sphere of action (2012, 68). It is thus not a far-fetched step to link the aforementioned understanding of *architectonics* with the systematics and infrastructure of software. According to Manovich, the latter "has become our interface to the world, to others, to our memory and our imagination—a universal language through which the world speaks, and a universal engine on which the world runs" (2013, 2).

Andri Gerber develops a similar understanding of the term *architectonics* by contextualising it with Immanuel Kant's use of architecture as a metaphor in order to think about philosophy (2019). Kant was interested in the very system of buildings beyond cursory metaphors focusing on pictorial properties (ibid., 137). He uses architecture not only as a metaphor in order to grasp philosophy but also as a construction of reason based on a firm foundation, leading to an ontological problem: only by completing the structure is its stability proven (ibid., 138). Gerber states that “[t]he term ‘architectonics,’ or ‘the art of systems,’ thus encompassed the impossibility of the *a priori* innate to this kind of endeavor“ (emphasis in the original, ibid.). In order to fully understand architecture and all its criteria, then, it must be designed, planned, and built at the same time. In actuality, this simultaneity is impossible to accomplish. As far as architectural practices are concerned, Gerber thus concludes that buildings are “always doomed to ruins” and the *architectonics* of Kant “mean an understanding of architecture as something impossible and unstable” (ibid., 139).

In context of playing computer games, the game world's code, algorithms, and database embody a blueprint with the associated building elements or, metaphorically, the game world can be understood as ruins with its dismantled fragments in the “subface”. At the same time, parts of its level structure or topography are traversed and navigated by a player-character perceiving the “surface” of the game world through pixels, textures, polygon-meshes, and diverse guidance strategies and systems of meaning. The pictorial build-up of the “space-image” (Günzel 2008, 172) is governed through the current field of view of the player-character, whether it is controlled by the player herself or by the software. Thus, the game world is staged only in parts or fragments, dependent on the current game state or position of the player-character. The numerous concurrent and complex strands of the computer game braiding and unbraiding its audiovisual perceivable structure lead to simultaneous dichotomies of designed/coded, build/unbuild, at-hand/stored in database, construction/deconstruction, in close vicinity to/far apart from the player-character, entering/exiting the memory buffer—that is the very ‘nature’ of the immaterial architectures *in/of* digital game worlds.

Let us briefly take a step back from this vantage point and look back in time: When game studies slowly established itself as a discipline, Espen Aarseth highlighted the indispensable property of digital game worlds by stating that “[m]ore than time [...] [and] more than actions, events and goals [...] games celebrate and explore spatial representation as a central motif and *raison d'être*” (2001, 161). Shortly after that, Ernest Adams formulated first thoughts to an understanding of *The Role of Architecture in Video Games* (2002) and Henry Jenkins used architecture (or is it *architectonics*?) as a metaphor in order to categorise the properties and types of game spaces in *Game Design as Narrative Architecture* (2004). Two publications deriving from former scholars of the Swiss ETH Zurich then expanded on the transdisciplinary discourse between architectural theory and history, urbanism and computer games: *Space Time*

Play. Computer Games, Architecture and Urbanism: The Next Level (von Borries, Walz and Böttger 2007) and *Towards a Ludic Architecture* (Walz 2010). Both provide cursory overviews that were furthered by Christopher W. Totten's compelling monograph *An Architectural Approach to Level Design* (2014). The topic of game space and its properties as well as architectural implications *in/of* computer games still are crucial in game studies, as the recently published anthologies *Ludotopia. Spaces, Places and Territories in Computer Games* (Aarseth and Günzel 2019) and *Architectonics of Games Spaces. The Spatial Logic of the Virtual and Its Meaning for the Real* (Gerber and Götz 2019) as well as Mathias Fuchs' monograph *Phantasmal Spaces, Archetypical Venues in Computer Games* (2019), among numerous papers and conference proceedings, verify.

Algorithms, databases, level structures and non-linear topographies are the very *architectonics* that provide, like architecture in actuality, "the ground for perception and the horizon of experiencing and understanding the world" (Pallasmaa 2012, 19, 44). This is also true for the role of designed space, for architecture *in/of* computer games: Michael Nitsche states that "[e]vents need to be defined and realized in their spatio-temporal setting by the player. [...] The necessary eye of the virtual camera makes these spaces cinematic and the interaction makes them accessible much like architectural structures" (Nitsche 2008: 51, 58). In line with this, Stephan Günzel understands computer games as media enabling "artificial navigation" (2008, 172) which is complemented by Gordon Calleja's summary:

There is an important difference to be appreciated between ergodic, simulated landscapes and non-ergodic representation of landscapes. Although one can imagine roaming around the represented space described in a piece of literature, traversal is limited to mental imagery. To move from one point to another in a game world, players must literally navigate their way, not merely imagine it (Calleja 2011, 74).

Therefore, it is all about movement, traversal, exploration, and navigation—whether it is the avatar within the staged game world, the digital image and its double ontology or the algorithms and data sets. Playing a computer game and experiencing the game world is heavily dependent on the appropriation of space (e.g. solving a puzzle, acquiring an item, freeing the princess, summiting a mountain) and on progression within game states that are mostly rhythmised by single windows or scrolling screens, individual levels leading to boss fight arenas or coherent "open landscapes" (Aarseth 2005, 505) staging a worldliness in a non-religious/secularly manner. It is all about movement, whether moving a cursor across the screen space and clicking on in-game objects in the "space-image", performing fast platforming or parkours, being pulled into a frontal attack or planning a strategic infiltration by scouting, circumventing hostile NPCs or hazard spaces through stealth gameplay.

Whilst still referring to the above-mentioned vantage point, it is only consequential to use Swiss architect Peter Zumthor's definition of physically real buildings in order to further clarify the simultaneity and fragility of computer game *architectonics*. According to him, architecture is the shell and background of life passing by and a container for the rhythm of movement (2010, 12). The consensus is evident: Shell and background are navigable, walkable, and playable level structures as well as non-walkable level geometry adding to the scenery and the enclosing *skybox* (for more on that, see my chapter in this book). The player-character represents life passing by. Rhythm refers to the modes of gameplay—motion patterns and spatiotemporal appropriations which derive from the coded game mechanics. Again, it is all about movement. The mode of spatiotemporal experience depends heavily on the “person-environment dynamic” (Strange and Banning 2001, 75; for an application on digital media, see McArthur 2016, 6–11; Bonner 2019) established by gameplay mechanics, quest topologies, and genre topoi. Finally, coming full circle, the *architectonics* of computer games do not only refer to the processes of play as well as to the game itself but also to the digital image and its algorithmically governed imaging procedures (Manovich 2002, 45, 46). It is this correlation paced in milliseconds and staging a fragmented view into the staged game world as well as enabling restricted courses of action within it that constitute the *architectonics* of game worlds. Under the Kantian take of ‘architecture as a system’ and ‘model of thinking’ Gerber concludes: “[a]rchitectonics [...] is more a condition than an object, and one that conveys the impossibility of the plan and the inescapable condition of ruin. [...] Video games, in a sense, represent both progress and impossibility, because the pace of the game does not allow to look backwards” (2019, 151).

While clinging to the prospect of the now well-known vantage point, it is of interest to understand the *architectonics* of computer games also on a more general level of perception and phenomenology under the idea of a ‘world’—or worldliness in a secularly meaning. In this way, the “person-environment dynamic” of computer games is indispensably linked to the concept of *environmental storytelling* as a crucial means in game design, which “fundamentally integrates player perception and active problem solving, building investment” (Smith and Worch 2010, 26). The concept of worldbuilding and understanding fictions or works of art as worlds is not new to Literary, Cultural, Media and Game Studies (e.g. Goodman 1978; Mitchell 1989; Fuller and Jenkins 1995; Pias 2000, 2017; Wöhler 2005; Finkelde 2007; Pietschmann 2009; Lukas 2013; Yacavone 2010, 2015; Gualeni 2015; Jones 2015; Wolf 2012, 2017; Ryan, Foote and Azaryahu 2016; Asendorf 2017; Reinhard 2018). In 1978, Nelson Goodman published with *Ways of Worldmaking* a crucial basic work in which he dives deep into the five processes involved in creating worlds—composition and decomposition; weighting; ordering; deletion and supplementation; deformation (1978, 7–22). He defines worldmaking as a “remaking” as it “always starts from worlds already on hand” (ibid., 6) and concludes:

Furthermore, if worlds are as much made as found, so also knowing is as much remaking as reporting. All the processes of worldmaking I have discussed enter into knowing. Perceiving motion, we have seen, often consists in producing it. Discovering laws involves drafting them. Recognizing patterns is very much a matter of inventing and imposing them. Comprehension and creation go on together (*ibid.*, 22).

Jumping to the year 2008, Goodman's understanding of creativity, world creation, and properties of worlds fits with Lars Zumbansen's idea of computer games which he critically defines as dynamic worlds of experience ("Dynamische Erlebniswelten") in context of the discourse of event society (2008, 21–32, 102). Zumbansen thus indirectly echoes Goodman's elaborated critical reflection on the aesthetics and "rightness" of worldmaking (1978, 91–133). Since then, the idea of understanding game worlds as products or at least interwoven with capitalism or neoliberalism was furthered by crucial studies (e.g. Dyer-Whiteford and de Peuter 2009; Möring and Leino 2016; Bailes 2019). Only recently, did Josef Köstlbauer, Eugen Pfister, Tobias Winnerling, and Felix Zimmermann define computer games as *world machines* ("Weltmaschinen") with a twofold meaning: on the one hand, they produce virtual worlds in which players (inter)act. On the other, they are machines contributing to the creation of the allegedly 'beautifully' globalised world of digitality in our actuality (Köstlbauer et al. 2018, 9). With this take, they question the allegedly apolitical, external, and location-independent status of digital games worlds within the in fact globalised and digitally ubiquitous world that the game industry is part of. The editors call for a rethinking of the role and impact of game worlds in today's society (*ibid.*). Another critical usage of the worldliness concept in order to understand, work with, and analyse computer games under aspects of philosophy, especially existentialism and phenomenology, is provided by Stefano Gualeni (2017, 2019). According to him, game designers configure the players' "possibility horizon" within a given game world. Gualeni wants to highlight the aspect of "frontier" or spatial restriction that is rooted in the term and reveals "the limited perceptual and interactive scale" within a computer game (2017, 127). Thus, in experiencing an 'ideal' game world with all its shortcomings, repetitions, and being independent from the grade of (non-)linearity, Gualeni also writes about feeling a certain "world weariness" ("Weltschmerz") due to the media-specific worldliness (*ibid.*, 117, 125, 131):

Digital environments are, I argue, better understood as existential tools: not as contexts in which we pursue complete happiness and satisfaction, but as instruments that allow us to negotiate various aspects of our (individual as well as collective) existence, in new and unexpected guises. [...] [W]e are constitutively bound to dissatisfaction, and inherently driven to explore and

experiment with new worlds and unfamiliar possibilities of being. Virtual environments, in their peculiar ways, arguably provide those experiences and possibilities. [...] [T]hey contribute to our existential struggle, both allowing us to transcend some aspects of our everyday relationship with the actual world, and in disclosing new ways in which our very incompleteness can be experienced and understood (Gualeni 2019, 165).

On the Chapters of this Anthology

With the above findings in mind, the complex media-specific constitution of digital game worlds calls for critical transdisciplinary research beyond restricted framings of individual research fields. The contributions of this book aim to show how and under which aspects digital game worlds are constituted as well as how they are believable or all-embracing, disorientating or unsettling for players. The chapters then are less concerned with the use or depiction of certain architectural styles or historic antetypes in the sense of a pure motif history. Rather, the structures and mechanics, levels and spaces, aesthetics and perception are researched bundled by the concept of *architectonics*. Said chapters are divided into four parts. Although most of the authors tackle several topics or approaches and can therefore be included in more than just one of the four, the grouping will help to give structure to and an overview of the transdisciplinary multiperspective character of the anthology's principal topics—namely spatial, *architectonics*, and world-shaped phenomena.

Part one “Authenticity, Historicity and Cultural Practices—Experience *in* and *of* Game Worlds” is constituted by three diverse approaches on the perception and experience *in/of* game worlds with focus on spatial and pictorial representation and adaptation of the physically real. In his chapter “Historical Digital Games as Experiences—How Atmospheres of the Past Satisfy Needs of Authenticity,” **Felix Zimmermann** understands historical computer games in the broader sense of an experience economy as “emodities”, especially dealing with the past. He critically contextualises terms like historicity, authenticity, and accuracy, including their respective discourses, with the aesthetic concept of atmospheres. In such a way, Zimmermann expands the field of historical game studies into new areas by implementing aesthetics and phenomenology. He provides an analytical method in order to properly analyse situations and environments of historical in-game settings. **Derek Price** is also concerned with heritage practices when he investigates a specific kind of user-created content dealing with adaptations and representations of cultural landscapes and places of actuality. In “Agricultural Spaces and Places: Studying User-Created Maps for *Farming Simulator 15* at Scale,” Price investigates the mods as well as the national or pop-cultural images players

create of regions by collecting and analysing metadata and using the methods of ‘distant reading’. The specific means of staging national identities and the role of distinct topographies within the simulation of industrialised agricultural management lead to findings heavily linked to the player community. A different kind of user-generated content is examined by **Vladimir Rizov** in the third chapter titled “PlayStation Photography: Towards an Understanding of Video Game Photography.” He reconsiders the remediation of photography in digital games by stating that in-game photography has to be understood as a continuation of the general photographic discourse and in its current form, photography is an “in-between act.” Understood this way, computer games “themselves [...] are a fundamental remediation of the photograph, the image.” Thus, Rizov critically investigates multiple discourses and practices of photography in game worlds as well as in actuality in order to propose a new model for research and analysis based on gamic action and quest mechanics.

The four chapters of part two, “Topoi, Topographies, and Topologies—Spatial Structures Of Game Worlds,” then further the study of properties of media-specific *architectonics* of digital game worlds with a focus on the spatial constitution, systematics, and mechanics of a (secularly) worldliness. In the second part of his chapter, “The *World-Shaped Hall*: On the Architectonics of the Open World Skybox and the Ideological Implications of the *Open World Chronotope*,” **Marc Bonner** uses Mikhail Bakhtin’s concept of the chronotope in order to provide a twofold analysis model of the spatiotemporal dynamics of open world games under topographic and topological aspects. He exposes an ideological differential of power between players and designers/developers that is inscribed in the coherent landscapes of open world games and thus in the oscillation between different play modes. Bonner contextualises this finding with Gilles Deleuze’s and Félix Guattari’s concept of *smooth* and *striated space*. Prior to that, Bonner first defines open world games as *world-shaped halls* in reference to Rainer Maria Rilke and Peter Sloterdijk with the example of the *Crystal Palace*. In such a way, Bonner provides an understanding of the very structures and *architectonics* of open world games, emphasising their function as a base for future analysis of game worlds under the aspect of *prospect pacing*. Although this contribution is more than double the size of the other chapters, it is not meant to be the ‘main body’ of the book or a hierarchical statement in general. It is just due to the fact that the two intermingled theories crucial to the initially DFG-funded research project (that made the workshop and anthology possible) have the possibility to be expounded adequately here. In the second chapter of part two, “Square, Marketplace, Tavern: Contested Spaces in Single-Player Neomedieval Role-Playing Game Cities,” **Krista Bonello Rutter Giappone** and **Daniel Vella** explore specific places and building types as topoi within “neomedieval” urban spaces in game worlds. Both authors investigate today’s power structures embedded in the seemingly distant medieval sign system. They contextualise Christian Norberg-Schulz and Henri Lefebvre, among others, in order to not only shed light

on the role of the player as tourist but also on the political implications of cities in computer games and their narrow linkage to today's discourses on politics and society in actuality. In her chapter "Taking a *Breath of the Wild*—The Concept of *Airness* in an Open World Game," **Cornelia J. Schnaars** undertakes a case study in order to expose the latest *Zelda* game and Nintendo's design concept of *airness* as a new take on the open world phenomenon off the beaten track. She focuses on navigation in, experience of, and the overall agency within a non-linear game world. In identifying three interlocking aspects, Schnaars develops an understanding of the distinct staging of the players' freedom based on a balance of player-induced and developer-induced gameplay and its potential for future open world design beyond the *Zelda* franchise. In context of Schnaars' investigation and Bonner's concept of *prospect pacing*, **Rolf F. Nohr** shows a further layer on navigation and decision-making in game space—the bare bones of game worlds. In his chapter "The Labyrinth: Video Games as Media of Decision-Making," Nohr critically examines the logics and mechanics of the maze or the labyrinth, respectively, as the most established spatial *architectonics* underlying most level structures and thus most game worlds. He states that the labyrinth is the architectural embodiment of "a kind of decision support system", intrinsic to algorithmic media and today's society. Therefore, Nohr questions whether decisions made in the players' labyrinth of possibilities are subjective. As a core feature, the labyrinth then characterises the constitution of game space as digital media. Nohr's close reading of the most crucial spatial topos of level structures is therefore a transition to core aspects of the subsequent part.

Hereafter, the three chapters of part three, "Identity, Reflection, and Spatial Challenges—Navigating Self-Reflexive Game Worlds," focus on media-specific uses of space and architecture in computer games under the aspects of their self- and/or meta-reflexive potential. Most of these chapters are case studies, enabling not only a close reading of a certain game world but also illustrating that today's computer games self-consciously address their own medial as well as gamic constitution and thus the role of the player. Subsequently, to the properties and means of the labyrinth in Nohr's chapter, **Hans-Joachim Backe** investigates the defamiliarisation of game space and its function to unsettle players in "The Aesthetics of Non-Euclidean Game Spaces—Multistability and Object Permanence in *Antichamber* and *P.T.*" By focusing on the structure of the corridor or hallway as architectural features and established level structure, Backe merges discourses like Game Studies, Neuroscience, and Psychology in order to analyse the visual illusions and spatial paradoxes players are confronted with. Here, the experience of disorientation not only shatters the players' fundamental behaviour built by experiencing the physically real but it also becomes the crucial entertainment of such computer games. In his chapter "I love how you can see the bottom of the universe from this room.' The Real-Virtual Architecture of Davey Wreden's *The Beginner's Guide*," **Benjamin Beil** is concerned with unfinished level structures and the exposure

of the artificiality and scenic properties of game space in general. In his critical analysis, Beil questions the role of in-game architecture, its glitches, and the authorship of the game designer. From here, he investigates the idea of game space as an exhibition space and as an object—a somewhat distinct material culture nested between the virtual and the real. **Theresa Krampe** provides the third chapter of part three. In “The World Machine: Self-Reflexive Worldbuilding in *OneShot*,” she investigates the aesthetics and mechanics of worldbuilding of the indie game *OneShot*. Krampe critically addresses the game world’s expansion beyond the in-game screen into supposedly ‘extradi-geometric’ windows on the desktop. She understands this (de)construction of the two-dimensional game world by exposing contained game space, code, and database as pars pro toto resonating with the *Zeitgeist* and the properties of today’s indie games. In such a way, players are confronted with the software logics of digital media on technological, narrative, and cognitive levels, and consequently with their own role.

Concluding the anthology, the three contributions of part four, “Sound, Haptics, and Artistic Research—Approaches Beyond The Brinks Of Game Space,” significantly complement the prior parts of this book as well as the understanding of the *architectonics* of computer games as defined above. They expand the horizon of interdisciplinary research approaches towards game space, architecture, and game worlds. In his chapter titled “Borderless Sound,” **Marcus Erbe** calls for a focus on analysing and thus experiencing game worlds aesthetically through their audiovisual situations and the accompanying interrelations between audio and video. He refers to Michel Chion, among others, in order to show the computer games’ state as software and an ever-changing process that is “prone to all sorts of unintended relationships between image and sound.” Thus, his vital investigation sheds new light on the understanding of the *architectonics* of game worlds through its media-specific potential and shortcomings between perceived image and sound that stage the game world together. **Carolin Höfler** goes beyond the analysis of computer games themselves and delivers a critical study on the role of the sense of touch in several fields of human computer interaction. In “Image Contact. Haptic Actions in Virtual Spaces,” she presents current technical developments, which enable the perception and navigation of virtual reality through haptic as well as ultrasonic feedback. This new take on illusionary spaces propels not only the idea of a digital space experienced beyond the long established supremacy of sight as a dominant sense but also enables a glimpse of the potentials of virtual reality as a haptic multi-sensory realm beyond the head mounted display. Höfler is interested in the liminal space that enables digital-physical interactions and thus a bodily immersion in 3D spaces. She traces early developments back to art history around 1900 as well as to the Bauhaus and its artistic research in tactile feedback systems. She questions the technical circumstances and developments in current VR games and research environments by compellingly combining discourses of architecture, design, aesthetics, and phenomenology. One crucial achievement of Höfler’s study is the call to alternative design

approaches to virtual reality settings—towards haptic architectures dethroning the moving images of the VR goggles’ displays and towards the user’s or perceiver’s need to newly relocate in the physical-virtual realm. In his chapter “Dreaming in the Witch House: An Esoteric Approach to Computer Games Research,” **Thomas Hawranke** provides the transcript of his lecture performance held at the workshop. He combines academic investigations with an artistic research approach. His multiperspective essay revolves around the famous encounter with a building from H.P. Lovecraft’s short story *The Dreams in the Witch House*, a contextualised overview on history of science and spatial theories as well as the players’ role within game worlds and her agency to exhaust its level geometry. Hawranke reaches beyond the horizon of game studies analysis in providing not only visualisations of the thematised issues and architectures but also in grappling game design practices and the *architectonics* of digital space by calling for critically informed artistic and esoteric research. He calls for players to perform transgressive play behaviours in order to investigate the game worlds’ every nook and cranny and thus explore beyond intentional, artificial borders into the unknown of the digital realm which may enable reflections on the player herself and even on her state as a human being.

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**1. Authenticity, Historicity,
and Cultural Practices**
Experience *in* and *of*
Game Worlds

Historical Digital Games as Experiences

How Atmospheres of the Past Satisfy Needs of Authenticity

Felix Zimmermann

Abstract In this chapter, historical digital games are identified as offerings of an experience economy comparable to formats of heritage tourism or living history. As such, the historical digital game aims to satisfy needs of authenticity. Authenticity is subsequently defined as a feeling rather than an objective quality and thereby separated from accuracy. To evoke this feeling, a game like *Assassin's Creed Odyssey* (Ubisoft Montreal, Quebec 2018) employs atmospheres of the past, which are introduced as a novel concept in this chapter. Finally, a preliminary framework between the poles of situations and constellations is offered to enable researchers to analyse such atmospheres.

Keywords Atmospheres, authenticity, accuracy, phenomenology, public history, experience, tourism, heritage, *Assassin's Creed Odyssey*

Introduction

To grasp what makes players all over the world come back to the *Assassin's Creed* series (Ubisoft, 2007–2020) every time a new franchise title is introduced, I ventured to the major distribution platform *Steam* and had a look at the store page of one of its most recent iterations, *Assassin's Creed Odyssey* (Ubisoft Montreal, Quebec 2018). The platform enables players to write reviews for the games they have played and either evaluate them as “Recommended” or “Not Recommended”. At the time of writing this text, the platform offers more than 33,000 reviews to interested parties trying to find out more about the game—or about the people that play them.¹ What I learned

1 The reviews referred to in this text are of course only a small sample of the entirety of reviews on *Steam*. Still, I see them as valuable clues to support my argument that atmospheric experience is of relevance for players of digital games. Further qualitative research is needed.

from scratching the surface of this vast pool of opinions is that players have heavily different motivations for playing this game and consequently different ways of writing about it. What sparked my interest as a Public Historian is how players describe their engagement with the setting of the game, which tells an alternate history of the Peloponnesian War and enables traversal of numerous Greek islands by foot, horse and ship. In a review, which 1,995 people “found helpful”, the user “steve.marte” for example writes: “[g]etting to walk the streets of Athens, Argos and Elis was like taking a trip back in time. Magical” (2019). What immediately strikes me as odd here is that someone who obviously could not have lived in the fifth century BC would describe his experience as “taking a trip back in time”. It appears that *Assassin’s Creed Odyssey* is able—at least in this player’s opinion—to create a convincing illusion of another time which becomes accessible as a virtual world. Additionally, user “ricmadeira” claims that “Ancient Greece really comes alive in this game” (2018) while “Makam” writes that “[t]he game really feels and plays like you are in the middle of Ancient Greece” (2018). The latter determines “the atmosphere” of the game as the “best of all ingredients” and notes that “it’s like all school history books from that era came to life” (ibid.). The reviews clearly share their admiration for some kind of experience that corresponds with what they imagine the exploration of the Greek islands of this time period would have felt like. Finally, while the user “Abz” comes to the conclusion that the game “follows the Greek mythology to it’s [sic!] lore [...] which makes the game all more historically accurate” (2018), “Makam”, on the other hand, attests that “[i]f you liked the movie ‘300’ you will love this too” (2018). Whatever constitutes the experience praised in these reviews appears to be a blend of pop cultural influences and contents which are deemed “historically accurate”.

In the following pages, I will attempt to outline a theoretical framework which enables researchers to appropriately describe and dissect this experience of the game. For this purpose, I will firstly describe how historical digital games can be understood as part of the “experience economy” as outlined by Joseph Pine and James Gilmore (1998, 97) and which is essential to understanding modern day engagements with the past. I will then continue by explaining how these games—as experiences of the past—can be seen as an instrument to satisfy needs of authenticity. Consequently, I will have to clarify what authenticity means in context of historical digital games and how it needs to be separated from ideas of accuracy. Then, I will claim that authenticity is a feeling which is evoked by engaging with atmospheres of the past. Finally, I will offer a preliminary² framework between the poles of situations and constellations to analyse these atmospheres of the past as they arise in digital game worlds.

2 The theory outlined in this chapter is developed as part of my doctoral project which explicitly focuses on atmospheres of the past in digital games. The arguments brought forth here are results of my early stage research.

Historical Digital Games as Experiences

In 1998, Pine and Gilmore claimed that western economy had entered a phase of an “emerging experience economy” (1998, 97), which is defined by the notion that experiences are in themselves “economic offering[s]” warranting the use of “admission fee[s]” to regulate participation in them (ibid., 100). They describe this phase at the end of the twentieth century as a transitory one in which experiences were primarily used to enhance the sales potential of goods and services. What they envisioned, however, is a fully developed experience economy in which experiences themselves can be sold independently from “traditional offerings” (ibid., 98). Now, around twenty years later, it can be said that they rightly predicted an ever-increasing importance of the commodification of experiences in the twenty-first century. Their ideas correspond well with what Eva Illouz terms “emodities” as the amalgamation of emotions and commodities and therefore of an emotional charging of consumption (2018, 23). Interestingly, Pine and Gilmore already hinted at the potential for “interactive games”, as they call them, to “render ever-more immersive experiences” (1998, 99). It is in this vein that I want to see historical digital games as a product of the experience economy and consequently as a commodification of experiences of the past and thereby as emodities.

Historical digital games, I am arguing here, are especially successful products of the experience economy as they are means to satisfy the need for authentic experiences, which is part of the human condition of late modernity. Here, modernity is understood as a “response [...] to the condition of modernization and the consequences of progress” (Boym 2001, 22). To elaborate: it was Jean Baudrillard who claimed that humanity entered a “hyperreal nebula” in late modernity (or, as some call it, postmodernity) which is characterised by an “implosion of the medium and of the real” (1994, 82). Hyperreality here refers to the idea that the integrity of representations itself is questioned as they begin to not refer to reality anymore but to themselves, eventually creating an illusion of reality, “a real without origin” (ibid., 1) and therefore a hyperreal. It is not my aim to follow Baudrillard’s “bleak pessimism” (Dow 2013, 225) here but to less radically point out the increasing uncertainty in everyday interactions of people all over the world questioning information they receive, images they see or relationships they have, not least induced by the success of digital communication media (Kerz 2017, 34). Additionally, as Zygmunt Bauman, a critical observer of modernity, notes, it is the failure of the state to sufficiently support its citizens and to instead force them to confront the challenges of life with their “(in most cases, grossly inadequate) resources” (2017, 42). The alleged necessity to see your peers as competitors in a fight for a place in the sun erodes even the basal certainty that could be found in face-to-face contact with other people (MacCannell 1999, 91). Without further elaborating on this admittedly broad subject, I want to conclude for the sake of my argument that the modern individual is faced with porous certainties and therefore suffers from “feelings

of lack” (Vidon et al. 2018, 63). As a reaction, the individual is in dire need to find the real again, the unmediated, the unfiltered or, in short: the authentic (see Zimmermann 2020).

Therefore, authenticity is a “term of crisis” which has gained importance since the second half of the twentieth century and is notable for its postulated double function as a symptom of the crisis sketched above and as a cure (Knaller and Müller 2006, 10–11). Inscribed in the search for authenticity is the hope to find certainty in a time of uncertainty. As the future appears bleak and riddled with anxiety over job perspectives, long-lasting relationships or even the climate, the modern individual resorts to the past. This past, it seems, is not gone and forever inaccessible but a “perfect snapshot” (Boym 2001, 49) which can be reconstructed to bring the authentic back into the present. Heritage practices like heritage tourism (Chhabra et al. 2003), re-enactment (Daugbjerg 2016) or living history museums (Kerz 2017) are dedicated to this reconstruction, to “turn[ing] the past into something visitable” (Macdonald 2013, 18). Thereby, they enable authentic experiences for their visitors who take advantage of this offering of a developed experience economy to satisfy their needs.

I want to stress the role of digital games as an interaction with the past which can only be understood if they are seen in the context of other heritage practices and are consequently seen as a specific form of such practices. Erik Champion already did some valuable research on this, attesting that digital games take part in processes of “virtual heritage” (2015, 95), as did Adam Chapman who claims that some games “are capable of offering access to heritage experiences” (2016, 177). Going in a somewhat similar direction, I want to claim that historical digital games are offerings of an experience economy dedicated to creating authentic experiences, which warrants the question of how a convincing authentic experience is realised in a digital game like *Assassin’s Creed Odyssey*.

Authenticity as Feeling

Historical authenticity is heavily and often overanxiously discussed in the context of digital games.³ However, while some researchers point out that “the videogames medium increasingly considers authenticity and accuracy to be separate designations rather than two sides of the same coin” (Sweeting 2019, 65), there still remains a problematic confusion on the difference between accuracy and authenticity. For example, Tara Jane Copplestone writes in her engaging study that “accuracy” is “relational, subjective

3 See for example the discussion on female characters in *Battlefield V* (EA DICE 2018) as reviewed by Owan Good 2018.

and contingent on the parties involved, media form used and the purpose of the account” (2017, 417), a definition which rather seems to fit the term “authenticity”. It is important here to differentiate between ‘object authenticity’ on the one and ‘subject authenticity’ on the other side. The former term refers to the empirical verification of originality and is of importance for the auxiliary sciences of history or for archaeology when tracing the origins of a given object (Pirker and Rüdiger 2010, 14). The latter term typically refers to the idea of being real to oneself, of acting according to one’s true nature (Saupe 2016). I want to follow a different meaning of ‘subject authenticity’ or rather, to avoid confusion, of a ‘subjective authenticity’ which has been productively refined in tourism studies (Wang 1999; Olsen 2002; Chhabra et al. 2003; Vidon et al. 2018). This is not the place to elaborate on the numerous theories on this kind of authenticity, which have been developed since the second half of the twentieth century. It is, however, important to note how the subjective dimensions of authenticity are theorised in this specific field of research. Based on Ning Wang, who has described authenticity as an “existential state of Being” (1999, 352), Kjell Olsen emphasises that the corresponding “feelings [...] are constructed in a social process” (2002, 164) and thereby he encourages researchers to pay attention to the processes which allow for such feelings of authenticity to arise. Quite generally, I would argue, it is only by utilising such a process-oriented perspective which unearths power structures, modes of staging, and relations between actors that it becomes possible to get the pluralistic terminological charge of the term authenticity under control.⁴ In this sense, and this appears to be the common ground of research on historical authenticity, it is impossible to precisely separate objective and subjective dimensions of authenticity. Rather, current research is focused on how these dimensions interact and intertwine (see Sabrow and Saupe 2016, 11). One way in which they interact is by means of atmospheres of the past as I will argue below. In my focus on digital game worlds, I am influenced by the valuable contributions of Andrew J. Salvati’s and Jonathan M. Bullinger’s concept of “selective authenticity” (2013) and Tobias Winnerling’s theory of “affective historicity” (2014).

To be clear: there can be no object authenticity in a digital game because every object, even the most detailed one, is always a simulation. Still, to complicate this, digital games often refer to object authenticity and create the illusion that they can reach such a form of authenticity. Here, the term ‘accuracy’ is again of importance. It describes the process of referring to object-authentic, that is: verified real-world objects by imitating them as closely as possible. Functions like *bump mapping* or *screen space reflections* are used in advanced game engines to make this imitation possible (see for example Bonner 2014, 219). Also, accuracy is often used to describe an adherence of a given game to ‘facts’ verified by historical science. As Copplestone points out, the reasoning

4 Elsewhere, I have called this the “semantic burden” of authenticity (Zimmermann 2020, 11).

behind this lies in the authority of the verified object or fact and in its power to again verify the setting and narrative of a game. She writes that “[t]he majority of both videogame players and creators [...] correlated accurate representations to the authority of these outcomes” (Copplestone 2017, 421–22) and thereby hints at an important power structure at work in digital games. It is therefore important to understand the idea of accurate representation in digital game worlds as a process of authentication. Accuracy and authenticity are never the same. It is the feeling of authenticity which counts in the end and which constitutes if a given player will accept a given game as an authentic display of a given time. Accuracy is a means to increase the *likelihood* of a feeling of authenticity to arise. In this sense and especially in the context of digital game worlds, accuracy is subordinate to authenticity and an enabler or amplifier of the latter rather than an aim in itself.

Here, I need to add that accuracy does not automatically refer to an adherence to the state of research in the historical sciences. Being accurate to pop culturally infused ideas of the past or to possibly outdated knowledge acquired at school, in short, to an “elementary discourse” (Winnerling 2014, 159), can also increase the chance of feelings of authenticity to arise. Furthermore, there are other processes at work in historical digital games apart from accuracy, which contribute to a feeling of authenticity. It is even possible for feelings of authenticity to arise even if the participants of a given experience are fully aware of the fact that there are no verified objects present or that the postulated object authenticity is an illusion (Vidon et al. 2018, 62–63). In the following pages of this text, I now want to claim that it is the interaction with convincing atmospheres of the past which allow for feelings of authenticity to arise.

Atmospheres of the Past

Atmospheres of the past are the most important medium capable of producing feelings of authenticity. Understanding how they are created and how they influence participants—or players, in this specific case—means understanding how historical digital games can be influential and successful heritage practices despite the fact that they cannot deploy ‘real’ object authenticity. As elaborated above, I want to understand authenticity as a feeling. In the case of the digital game, it can be further described as a convincing feeling of “as-if” (Kerz 2017, 126) as the status of the digital game being a simulation is undeniable, even for the most immersed player. Therefore, the digital game “does not simulate a real world but familiarizes us with the simulation as real” as Konrad Wojnowski puts it (2018, 91), which, again, does not imply that feelings of authenticity become impossible to achieve. Rather, by means of producing atmospheres, the simulation can indeed satisfy needs of authenticity.

“Atmospheres fill spaces; they emanate from things, constellations of things, and persons”, as Gernot Böhme writes (2017, 25). Quite similar to Christina Kerz, I want to understand atmospheres as a medium connecting perceiving subjects with their surroundings on a phenomenological level (2017, 55–58). As Kerz, referring back to Jean-Paul Thibaud, writes in her insightful study of the living history site *Colonial Williamsburg* in the U.S. federal state of Virginia: “we are not sensing an atmosphere itself, but perceiving a situation according to the atmosphere that our lived body is immersed in” (2016, 916). This underlines that atmospheres are able to change our assessment of a given space—may it be a real or a virtual one. That it is in fact possible to interact with atmospheres of virtual worlds has already been argued by Marc Bonner (2014, 213) and myself (Zimmermann 2019, 53–62), heavily drawing upon Rune Klevjer’s phenomenological discussion on the player-avatar coupling (2012). To avoid a lengthy discussion here, I want to attest that players are able to extend their “bodily space” into the virtual worlds of digital games (Klevjer 2012, 23).

Atmospheres are a medium that is used to produce certain feelings in certain contexts, for example feelings of authenticity in the context of historical digital games. They are created by “aesthetic workers”, as Böhme calls them (2017, 73), which can refer to anyone involved in the production of digital games, including level and environment artists, as well as user interface or sound designers. Atmospheres of the past are a specific manifestation of the medium ‘atmosphere’, created to satisfy needs of authenticity by designing the game in a way that it successfully offers a convincing simulation of a specific time and space. To analytically grasp atmospheres, it is paramount to understand that they are always perceived as a “total impression” (“Totaleindruck”) and can only be dissected in their constituent parts afterwards (Kerz 2017, 58). The analytical process can therefore be described as a translation of a given situation to a constellation.

To give an example of how a constellation analysis can be conducted: on the way towards the harbour of Naxos on the island of the same name, players of *Assassin’s Creed Odyssey* enter a certain atmosphere of the past which I would describe as calm and warm (depending on the in-game time and game state). This atmosphere, experienced as a total impression of the situation, colours the interaction with the game world without players actively having to reflect on their surroundings (» *Fig. 1*).

It is hardly possible to precisely determine what players are doing, thinking or feeling when arriving at these crossroads in the game and it would be a futile endeavour to speculate on it without conducting elaborated reception and user studies. Players might be running away from hostile forces, they might be trying to get to their ship as fast as possible or they might be looking for a place to stroll around and enjoy the sunset—and this is not even taking into account the different play settings in the real world. The whole idea of the constellation analysis is to bypass these eventualities of



Fig. 1 A situation. The island Naxos in *Assassin's Creed Odyssey* (Ubisoft 2018).

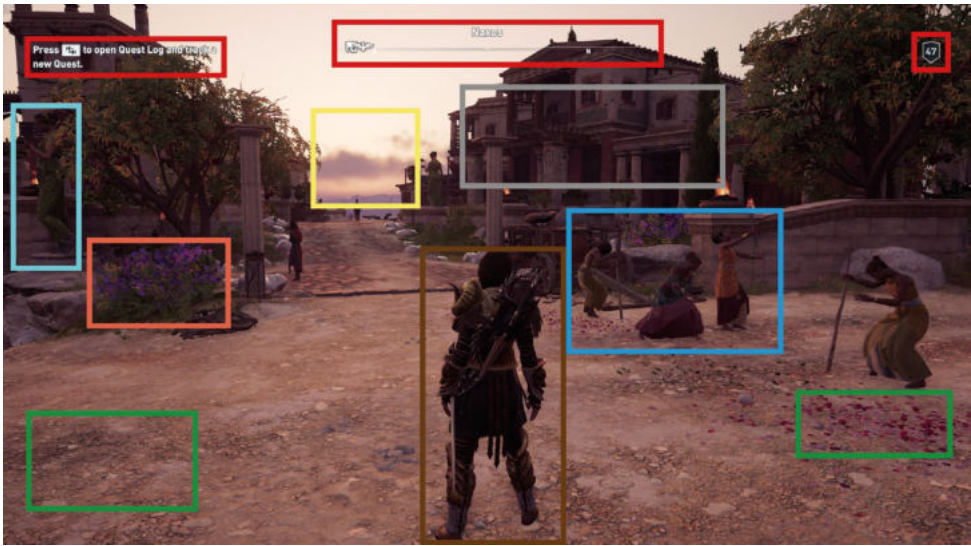


Fig. 2 A constellation. The island Naxos in *Assassin's Creed Odyssey* (Ubisoft 2018).

subjectivity and rather focus on the object side, which are the dedicated elements constituting the atmosphere in question. This object side can be called the “atmospheric potential” of a situation “that can be explored by every individual” (Kerz 2016, 916). It is the main thrust of the concept of atmospheres of the past to treat this “atmospheric potential” as a means to an end: the authentication of the game world.

So rather than speculating on how a situation might or might not be perceived by players, it is necessary to turn this situation into a constellation and thereby change the perspective on it (see Kerz 2017, 65; Schmitz 2018, 53). A constellation analysis enables researchers to understand how a certain atmosphere of the past has been created by the respective aesthetic workers. Its aim is to unearth the craft of producing an atmosphere of the past.

» *Figure 2* shows how an analytical look at the aforementioned situation turns it into a constellation of elements which increase or decrease the chance of a successful atmosphere of the past arising. The total impression, the *modus operandi* of atmospheric experience, is dissolved into an analytical look at the details. Marked are the user interface (red), the skybox (yellow), architecture (grey), a marble statue (turquoise), flora (orange), different ground textures (green), dancing non-player characters (blue) and the avatar (brown). These elements (among others) influence the atmosphere and, by means of the avatar, enable players themselves to influence it—and to switch to a different situation at will. Without going into detail here, I want to make some early remarks on the function and importance of some of these elements: the user interface has the potential to severely harm the atmosphere of the past as it can be identified as strictly non-diegetic, therefore not belonging to the game world as such. It is notable, however, that *Assassin’s Creed Odyssey* employs a slimmed-down user-interface which leads me to the assumption that its impact on the arising atmospheres can be deemed minimal. It is also of interest how *Assassin’s Creed Odyssey* allows players to customise and even hide the interface completely which might enable players who are especially eager to engage with authentic experiences of the past to personalise the game to their needs. The impressive skybox of the game is of interest as it tends to display only the most beautiful sunsets and thereby gives the virtual image a warm, reddish tone. Looking back at how Svetlana Boym describes the past as a “perfect snapshot” (2001, 49), it becomes plausible that even this hyperreal perfection of the lush sunset plays an important role in constructing an atmosphere of the past able to authenticate the game world. Another important element, which this screenshot fails to convey, is sound. Engaging with the game, players will be confronted by the sound of voices blending with the chirping of crickets in the distance while the leaves of the nearby trees rustle in the wind. Referring back to Konrad Wojnowski, who claims that the game “familiarizes us with the simulation as real” (2018, 91), I want to stress here that such soundscapes are invaluable to atmospheres of the past if they want to successfully evoke feelings of

authenticity because players not only expect the past to look but also to sound a certain, plausible way.⁵

Architecture, finally, should be considered as a “medium within a medium: it rhythmises and regulates our experiences of the world” (Bonner 2019, 216). Therefore, it does not influence the atmosphere in the same way sound or lighting does but rather incorporates these elements and channels them. Architecture determines *how* players move through space, it offers “suggestions of movement” (Böhme 2017, 19),⁶ and thereby is an essential tool for aesthetic workers to ensure that atmospheres are experienced as intended—at least most of the time. To be more concrete in relation to the situation shown in » *Figure 2*: the temple building visible on the right is atmospherically potent because it functions as a somewhat accurate depiction of an ancient Greek temple building. In this sense, it functions as a “decorated shed” as it operates by means of its specifically designed façade (see for example Böhme 2018, 139). Contrary to some other buildings in the game, the temple structure in question is not accessible and could therefore be criticised as an “empty shell” (Götz 2019, 206) or even an “architectoid” for which Götz attests a fixation on “primarily visual platitudes” (ibid., 205). Still, these “platitudes” fulfil an atmospheric function and contribute to the atmospheric potential of the situation. Also, and arguably even more importantly, the building rhythmises the player’s experience and how the atmosphere of the past unfolds. In the situation depicted, it opens a direct line of sight towards the sunset and encourages players to follow the road towards the harbour. It regulates the effects of light and shadow on the atmosphere and predetermines (to a degree) how players transition into the next atmosphere. Finally, the building is of importance as “ludic topology” (Aarseth 2019, 131) as it can, for example, function as a climbable vantage point for players to overlook the scenery and, therefore, to easily get into contact with the atmospheric potential of the harbour area of Naxos.

To conclude this short and rather cursory analysis: depictions deemed accurate by a player or—ideally—by most players can be and usually are a part of such constellations. But again, accuracy and authenticity are not the same and alleged accuracy is only ever a part of the answer to the question why a specific game is valued as authentic. More than anything else, it is the total impression of a given situation that needs to correspond with the expectations of the audience or at least be deemed plausible. In short: *plausibility trumps accuracy*. Occasional inconsistencies or inaccuracies become unimportant when they are encased in a convincing atmosphere of the past. We perceive a situation “according to the atmosphere”, as Kerz writes (2016, 916), and

5 Rasmus Greiner goes into a somewhat similar direction with what he calls a “sonic histosphere” in film analysis. This term refers to the way in which “sound design models history, makes it a palpable object of experience and prompts critical reflection” (2018, 34).

6 Böhme determines these “Bewegungsanmutungen” as a specific type of atmospheres (2001, 89).

according to a successful, convincing atmosphere of the past, inconsistencies and inaccuracies are perceived as consistencies and accuracies. This is the power of atmospheres.

I want to stress again that atmospheres are never a guaranteed success (Willner 2016, 66). The aesthetic workers behind a given game—especially behind AAA games like *Assassin's Creed Odyssey*—will surely try to offer situations which correspond with as many players as possible but still: a player who is well-informed on the depicted time period might be confronted with inaccuracies so severe that they will prevent an atmosphere of the past from arising. *Steam* user “Czarina Kalinka” for example writes that “[w]hile it looks stunning, most places seem copy pasted with older assets and you soon realize that the impressive temples are all the same” (2019) which would be one possible reason as to why an atmosphere of the past could break down. In a similar vein, an intrusive user interface, as mentioned above, or a glitch in the game world can harm the arising atmospheres. Also, more research needs to be done on how players with different attitudes towards a game and in different play settings react to different situations and if and how atmospheres of the past are perceived in these contexts.

Before conducting reception and user studies, it is essential to understand the craft of producing successful atmospheres of the past. For this, I would argue, constellation analyses of situations in successful historical digital games are the practicable way forward. Complementing these analyses with interviews in collaboration with aesthetic workers of the game industry will likely unearth a toolbox of techniques used by different departments in game development to create convincing atmospheres (of the past). This, finally, will help us to understand the shape and form of modern day historical digital games and their widespread success.

Conclusion

“Like taking a trip back in time”—“Ancient Greece really comes alive”—“feels and plays like you are in the middle of Ancient Greece”: in this paper I argued that these positive assessments of the game *Assassin's Creed Odyssey* can be analytically grasped by seeing them as successful interactions with atmospheres of the past which lead to feelings of authenticity arising in the reviewers. In these specific cases, it seems that the simulation of the game influenced how the reviewers think and feel about the depicted time and what they will expect from other depictions in the future. Consequently, *Assassin's Creed Odyssey* can arguably be determined as a successful offering of an experience economy, an emodity (Illouz 2018), which reacts to increasing needs for authenticity in modern society. This, I claim, opens up a new way of thinking about the success of the *Assassin's Creed* series and other historical digital games as a new form of heritage practices satisfying needs for authenticity to their economic advantage. For this, the concept of

atmospheres of the past is essential as it can plausibly explain how digital games are able to induce feelings of authenticity despite their inability to present verified original objects. Rethinking these games in terms of situations and constellations establishes a novel phenomenological perspective on how they are experienced. While research on other heritage practices has already been productively engaged with the idea of atmospheric engagement and subjective experiences of authenticity (see Willner, Koch and Samida 2016), its potential has not been utilised for “historical game studies” (see Chapman et al. 2017). With this article, I hope to have introduced terms and concepts to the “analytical langue” (ibid., 367) of historical game studies suitable to unlock this potential.

Figures

Fig. 1: Screenshot by the author.

Fig. 2: Screenshot by the author; edited by the author.

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Agricultural Spaces and Places Studying User-Created Maps for *Farming Simulator 15* at Scale

Derek Price

Abstract This chapter investigates the relationship between virtual spaces in the computer game *Farming Simulator 15* (GIANTS Software 2014) and the actual cultural landscapes and places that user-created maps refer to and represent. It argues that scholars can make meaningful statements about trends and tendencies in user-created modifications, or mods, by using techniques of ‘distant reading’ borrowed from the Digital Humanities. The chapter demonstrates how collecting and analysing metadata about mods from mod-hosting websites can help us better understand the politics of cultural representations of games for which mods constitute an important part of the play experience, and argues that the proposed method can supplement and benefit other scholarly approaches to studying user-generated content.

Keywords User-generated content, mods, game studies, digital humanities, distant reading, cultural representation, *Farming Simulator*

Introduction

The simulated spaces and environments in computer games have always had complex relationships to actual cities, regions, nations, and cultures. This is particularly evident in the history of games which simulate 3D environments. Even before ‘photo-realistic’ graphics, designers of many games strove to create an indexical relationship between the virtual spaces in their games and the actual world. This trend in game design begins at least as early as 1982 with the release of *Microsoft Flight Simulator 1.0* (Microsoft 1982), which includes separately loaded skyboxes of American cities marked by recognisable features and landmarks such the *Statue of Liberty* in its rudimentary merged New York/Boston environment in order to emphasise the game’s

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relationship to the actual world.¹ In recent years, the *Grand Theft Auto* series (DMA Design, Rockstar North 1997–2013) has become well-known for the close relationship between its open world maps and real-world cities. As critics have noted, *Grand Theft Auto V*s (Rockstar North 2013) open world map Los Santos mirrors in part the landscape and architecture of Los Angeles, the Bay Area region, and their surrounding topography (Sweet 2013).

This trend in game design of recreating or referencing actual places and cultures in digital game spaces speaks to a longer history of fictional and non-fictional forms of representation which strive to reproduce the world through media. It also serves as an example of the politics of representation in which developers, regulators, localisers, and players alike imagine, construct, and negotiate what Rebecca Carlson and Jonathan Corliss call “mythologies of cultural difference” (Carlson and Corliss 2011, 61). But especially in recent years, when access to the resources, skills, and tools necessary to produce simulated 3D environments has become more attainable, user-generated content in the form of modifications, commonly referred to as mods, have become as important to many players’ experiences of a game world as the developer’s ‘official’ version. Ranging from small aesthetic tweaks like self-created skins for polygon models to complete overhauls of the core rules and systems of a game, mods can be seen as a form of voluntary play (Kow and Nardi 2010), a form of participatory culture (Postigo 2010), or a form of free labour, which Tiziana Terranova once described as both “voluntarily given and unwaged, enjoyed and exploited” (2013, 34).² Active mod communities transform and blur the boundaries of ‘official’ versions of computer games into user-created “assemblages” (Taylor 2009), constituted by professional, amateur, and hobbyist developer contributions.

The practice of ‘modding’ poses a challenge to how researchers should study the relationship between spaces in computer games and actual places and cultures. If a computer game is not only the ‘official’ retail version released by developers, but is also constituted by an ecology of user-generated content in the form of mods (and other para- and meta-textual media) which users themselves combine in unpredictable ways, how would one study a particular game, series, or genre’s representations of nations and cultures, especially when active modding communities often produce hundreds or even thousands of individual mods? In this chapter, I will offer a method called ‘distant reading’, borrowed from the Digital Humanities, for studying mods at scale, which could help researchers answer this question in a meaningful way. In order to

- 1 For further information on the constitution of the skybox and the concept of the *world-shaped hall*, the adaptation of physically real regions, biomes or topographies of the world, see Bonner’s chapter in this book.
- 2 For more about the relationship between labour and play, especially with regards to computer games, see Kücklich, 2005.

demonstrate this method, I will present a case study of user-created maps for *Farming Simulator 15* (GIANTS Software 2014) in which I collected and analysed metadata in order to understand how modders describe their mods in relation to actual places and cultures. In what follows, I will present a multiple-method approach to understanding mods as cultural representations, give background on the *Farming Simulator* series (GIANTS Software 2008–2019), explain how I carried out my case study, and present findings about which cultures and places most often serve as inspiration for *Farming Simulator 15* modders.

A Multiple-Methods Approach to Mods as Cultural Representations

In addition to the method I will propose below for studying mods at scale, if we want to understand mods as cultural representations, we also need to consider the structures and systems that shape modding communities and their creations, the individual and social motivations which drive modding as a practice, and the multiple layers of meaning inherent in aesthetic objects like mods. Fortunately, there is an extensive body of scholarship on user-generated content which we can draw from in order to understand the creation of mods, modding culture, and modding aesthetics. One of these approaches to studying mods could be called the ‘political economy’ approach. Olli Sotamaa exemplifies this approach when he argues in his essay “‘Have Fun Working with Our Product!’: Critical Perspectives On Computer Game Mod Competitions” that by looking at the rules and structures of “mod competitions” we can better understand trends in user-generated content (2005, 6). Sotamaa’s argument traces how game developers and publishers use “mod competitions” to “direct hobbyist creativity by defining what is suitable and fitting and what is clearly prohibited” (ibid.) through rules for entries to the competition and restrictive End User License Agreements which limit mod-creator’s rights with regard to their creations. Political economy approaches like Sotamaa’s draw our attention to structural influences on modding practices and make us attentive to how organisational systems like a “mod competition” can generate and reinforce ideologies both in the subject matter of mods and in the ways in which mods are produced and circulated.

Scholars have also conducted research on mods by studying the culture of modding communities and modders’ motivations for creating mods. This approach often uses interviews, questionnaires, and surveys to try to understand why modders create mods in the first place. Hector Postigo’s article “Of Mods and Modders” (2007) and Sotamaa’s article “When the Game Is Not Enough: Motivations and Practices Among

Computer Game Modding Culture” (2010) both use these instruments to measure the value of modder work and the motivations behind modding, which range from using modding as a form of “artistic endeavour” and as a way to build a portfolio of work in order to enter the game industry (Postigo 2007, 309–10), to a combination of “playing, hacking, researching, self-expression, [and] cooperation” (Sotamaa 2010, 246). In a later study titled “Computer Game Modders’ Motivations and Sense of Community: A Mixed-Methods Approach” (2014), Nathaniel Poor combines tested, quantitative survey instruments such as the “Brief Sense of Community Scale (BSCS)” developed by Peterson et al. (2008) with qualitative, informal interviews to study modders’ motivations and sense of “community.” Poor’s mixed-methods approach yielded interesting results which called into question earlier studies’ claims that many modders allegedly create mods in order to get a job in the games industry (2014, 1258). The interplay between qualitative and quantitative methods in Postigo’s, Sotamaa’s, and Poor’s works is instructive because it helps us understand why modders create mods and demonstrates how inductive surveys and quantitative studies can serve as a counterpoint to deductive, top-down, theoretical approaches.

In addition to studies of the political economy of modding and the social aspects of modding culture, some studies focus on the design, subject matter, and form of mods themselves, treating them as aesthetic objects which suggest and cater to different kinds of desires and subjectivities. Tom Welch’s online-published article “The Affectively Necessary Labour of Queer Mods” (2018) adopts an aesthetic approach to mods and examines two different practices of modding computer games which resist “hegemonic attitudes towards gender and sexuality” (ibid.). Using examples from a variety of popular, commercial video games, Welch argues that modders have resisted heteronormative game design by introducing queer content and play in the form of “cosmetic enhancements” which alter the representational aspects of games and “mechanical alterations”, changing the rules and structure of play to imagine different, queer subjectivities and desires (ibid.). Welch’s approach is valuable for us here because it reminds us that mods, just like other aesthetic objects, do political work and imagine particular forms of social and individual life.

While there are many other important scholarly contributions to the study of user-generated content for computer games, these three approaches reveal three different focuses in the study of mods: studying the structures which encourage certain kinds of modding practices, studying modders and the practice and culture of modding itself around a certain game or in a certain context, and studying particular examples of mods which reveal creative, political, and social practices. My approach to the present study is drawn from the Digital Humanities practice of collecting and analysing metadata. It builds off of work such as Michael Black’s article on the history of Mozilla (2015), in which Black argues that “close-reading” is “not suited to the scale and scope of modern application software” and that “distant reading” can help us better “narrativize” the

history of software development practices (ibid.). As I will demonstrate in my case study, I believe distant reading can help us understand histories and practices of modding in ways that strengthen the three previously mentioned approaches to studying mods: it can serve as a counterpoint and empirical test of structural critiques of modding production, it can help researchers interested in the social aspects of modding identify particularly important individuals and groups within a modding community for further quantitative and qualitative study, and it can contextualise the aesthetic analysis of particular mods and help us understand what kinds of cultural representations are typical or exceptional in modding for a given game, series, or genre.

Case Study and Method— A Distant Reading of *Farming Simulator 15*

In order to demonstrate how the distant reading of metadata about mods might help us answer questions about how games mediate and represent ideas of nation and culture, I will present a case-study of user-created maps for *Farming Simulator 15*. The *Farming Simulator* series is developed by GIANTS Software, a Swiss developer originally based in Zürich which has since expanded to Erlangen, Germany and Brno, Czech Republic. The series began in 2008 with the release of *Landwirtschafts-Simulator 2008* (GIANTS Software 2008), and continues to the present day with over a dozen iterations in the series up to the most recent game, *Farming Simulator 20* (GIANTS Software 2019). In the series, players operate industrial farming equipment and perform various kinds of agricultural work from a first-person perspective. The game is open-ended and features large, ‘open-world’ spaces where the player is free to plant, harvest, and sell crops in order to buy more fields and farming equipment.

Over its many iterations, the *Farming Simulator* series has changed how it positions the setting of its maps in relation to actual places and cultures. Early iterations of the series contain few obvious markers that would indicate any specific region, nation, or culture,³ but later in the series, the developers began to embrace map designs that had clear references to actual places in the world. For example, *Farming Simulator 2013: Titanium Edition* (GIANTS Software 2013) has two maps: Hagenstedt, which has landscape features like Dutch-style windmills that suggest a European setting, and Westbridge Falls, a map of a small, ‘western’ town that is littered with flags of the

3 Although, the map for *Farming Simulator 2008* does feature a brewery where you can sell your crops, many wind turbines, and two churches, suggesting a certain economic, religious, and cultural setting in which beer, Christianity, and sustainable sources of electricity are important.

United States of America. This trend continues in *Farming Simulator 15*, where players have the opportunity to farm in the ‘Nordic’ forests of the map Bjornholm, or even on a former ‘farmer cooperative’ titled Sosnovka, which is likely a reference to the political and agricultural history of the Czech Republic.⁴ These trends in the official maps released by developer GIANTS Software suggest a slow embrace of references to specific places and cultures, and thus cultural landscapes, with an emphasis on European and American settings.

As the developers themselves claim, part of the success of the *Farming Simulator* series is due to its ability to attract large numbers of modders. Because GIANTS Software built the game engine for *Farming Simulator* to be compatible with common scripting languages like LUA and file formats like .xml, even *Farming Simulator 2008* attracted a relatively large modding community that quickly began adding new tractors, crops, weather effects, and maps to the game. Even casual searches of websites for *Farming Simulator* mods suggest that modders began early on to make reference to specific farms, regions, nations, and cultures in the titles and descriptions of their maps. However, the question of whether this trend became the norm over the course of the series is difficult to answer by manually reading and taking notes about individual maps, as there are hundreds or even thousands of user-created maps for some iterations of *Farming Simulator*.

In order to test whether there is a significant tendency in user-generated maps to refer to or represent actual places and cultures, I collected metadata about user-created maps for *Farming Simulator 15* from five different mod-hosting websites. Both as an example for distant reading and as a study of the series in general, *Farming Simulator 15* is a good test case for several reasons. As previously mentioned, modding has always been important to the series, and mods likely played an important role in many players’ experiences of the game. Additionally, the *Farming Simulator* series, and *Farming Simulator 15* in particular, is quite popular around the world,⁵ resulting in a “network effect” in which an active modding scene attracts large audiences, which in turn attracts more modders.⁶ Also, in terms of availability of data and stability of the data set, *Farming Simulator 15* is ideal: the game is still recent and popular enough that many websites still host data and mods for it, but most ‘active modders’ have moved on to later titles in the series, meaning that the set of possible *Farming Simulator 15* mods should be relatively stable.

4 I base this assumption on the fact that the map features Czech Republic-based tractor brands and on histories of agriculture in the Czech Republic/Czechoslovakia. For more on this history, see Miller 1999.

5 According to reporting from VICE, *Farming Simulator 15* sold “3 million copies in two years” (Maiberg 2016).

6 For more about the “network effect” see Srnicek (2016, location 668).

After extensive research and iteration, I wrote a series of *Python*-based computer programs to automate the collection of metadata from five different mod-hosting websites: ls-portal.eu (2019), ls2015.com (2019), fs15.lt (2019), farmingmods.net (2019), and farmingmod.com (2019).⁷ I chose these websites based on several criteria. I selected only websites that were specifically dedicated to mods for GIANTS Software's *Farming Simulator* series, and I favoured websites which hosted more mods and had more data about those mods. Moreover, I chose websites that had more 'likes' on their Facebook pages (in order to select popular mod websites), as well as websites with a variety of languages and domain names in an attempt to capture data from a wide variety of modders from different geographic locations.

One thing that became apparent while collecting data from these websites was that they often hosted the same mods, suggesting they were gathering data from similar sources. But there was also a great deal of variety in the level of detail and comprehensiveness of these different websites: both farmingmod.com and farmingmods.net had ~3,000 different webpages for mods in their map categories, while LS2015.com had the least, with 310 distinct URLs for user-created maps. Another challenge in cleaning and analysing data was the lack of version control on the websites that I collected data from. All five sites treated maps with titles like "Big Farm v1.0" and "Big Farm v2.0" as separate and unrelated maps, giving each their own separate page. While I initially cleaned my collected data to exclude updates or patches (for example, counting Big Farm and all its subsequent versions only once), in my final analyses, I decided to include new versions of maps in the total count of maps on each website, as visitors of these mod-hosting websites would have seen the titles of those maps more frequently, a fact which may have shaped how both mod-producers and -consumers thought about the 'spaces' of maps for *Farming Simulator 15*.

In the end, I collected the following categories of data from all five websites: titles of mods, text descriptions of mods, and dates when mods were uploaded to a particular website. Unfortunately, download counts were not always available, and authorship/crediting data was often missing or difficult to parse, barring the possibility of tracing mods back to teams or authors, or making any judgments regarding which mods were most well-received by players. Based on the data I was able to collect, I decided to conduct my analysis with the goal of answering two questions:

7 As a note, "fs" stands for "Farming Simulator" and "ls" stands for the German title of the game, "Landwirtschafts-Simulator." I could not collect data from GIANTS Software's official *Mod-Hub* platform, as it seems they only host mods for their newer releases, *Farming Simulator 17* (GIANTS Software 2016) and *Farming Simulator 19* (GIANTS Software 2018). In a future version of this project, I may consider trying to use the Internet Archive to collect data from this 'official' mod platform as well.

- Question 1: Is it a common practice for modders to describe their maps as representing or referring to an actual culture or place?
- Question 2: If modders *do* frame their maps as representing or referring to specific places or cultures, which places and cultures are most common?

I collected information on nearly 8,000 webpages across all five websites and conducted analyses on statistical samples of each website separately. Sampling is a process by which one can draw statistically relevant conclusions about a large population without having to analyse every unit of that population. To create samples for each website, I used a sample size calculator available online from the Australian Bureau of Statistics (2018) and calculated simple random samples of each website's total number of mods that had a 95% confidence level and a confidence interval of .05. This means that my samples had a 95% chance of accurately representing the total 'population' of mods on each website, plus or minus five percent. Once I had created one sample for each website, I attempted to find a program, tool, or method to automatically recognise words in the titles and descriptions of the mods which referred to a specific place or culture. Although there are some programs that are supposed to do this relatively accurately, such as the *Python* library "geograpy" or the Stanford Natural Language Processing Group's *Stanford Named Entity Recognizer* (NER), these programs were either too inaccurate or only functional for a limited number of languages. Because my dataset included text in a variety of languages (English, German, French, Portuguese, Polish, Russian, and more), I manually analysed the title and description of each mod, searching map titles in Google Maps to see if they were actual towns, cities, farms, or regions in an actual country, marking whether or not the mod was referring to an actual place or culture, and if it was, noting which country.⁸ After completing this analysis, I was able to answer both questions that I set out to answer. With regards to Q1, the data I collected suggested that it *is* a common practice for modders to describe their maps as representing or referring to an actual culture or place. As can be seen from » *Table 1*, depending on the website, there is anywhere from a 54.4% – 70.0% chance that a modder will describe their map as referring to an actual culture or place. This suggests that indexicality and cultural specificity are important to mod creators and constitute the norm in map-making for *Farming Simulator 15*.

Because I was able to answer Q1 in the affirmative, I could also give a meaningful answer to Q2: "If modders *do* frame their maps as representing or referring to specific places or cultures, which places and cultures are most common?" The answer to this question also varied by website, but one clear trend emerged: on almost every website,

8 Just as a note, I have superior reading proficiency in English and German and basic reading proficiency in French and Spanish. While this method was still surprisingly effective for languages that I do not have proficiency in, there may be a few errors in my counting, but I do not think they are significant enough to discount this method or my findings.

Table 1 Results for Question 1 “Is it a common practice for modders to describe their maps as representing or referring to an actual culture or place?” (graphic by the author).

Website	Population	Sample Size	Yes (count)	No (count)	Yes (%)	No (%)
LS2015.com	310	172	114	58	66.3%	33.7%
ls-portal.eu	655	243	170	73	70.0%	30.0%
fs15.it	802	265	177	88	66.8%	33.2%
FarmingMod.com	2943	340	191	149	56.2%	43.8%
FarmingMods.net	3105	342	186	156	54.4%	45.6%

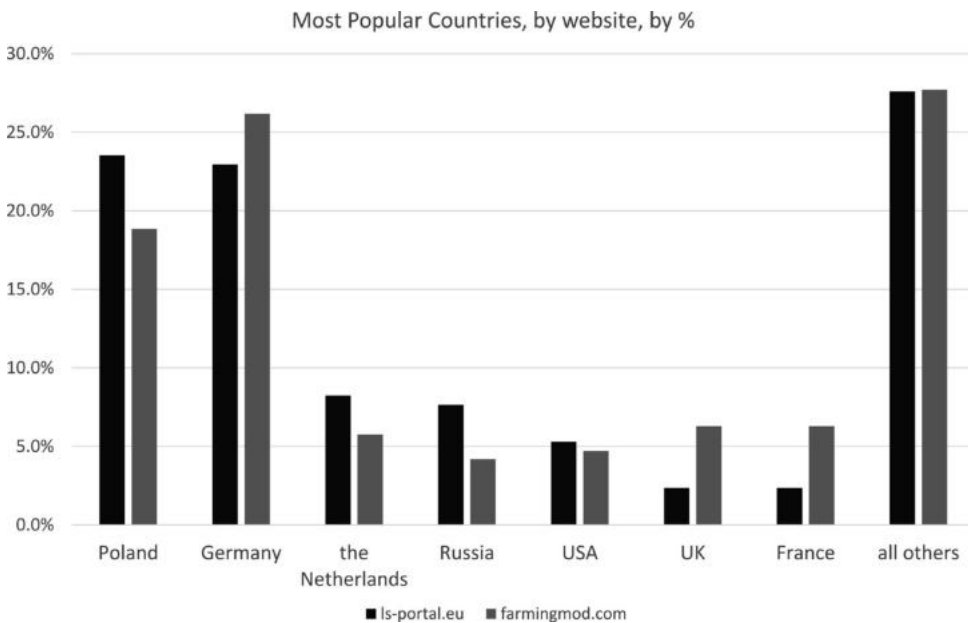


Fig. 1 A chart comparing popular countries mentioned on ls-portal.eu and farmingmod.com.

Germany and Poland emerged as the first and second most popular settings for user-created maps for *Farming Simulator 15*. However, the countries which appeared alongside Germany and Poland in the top five varied by website.

For example, the graph above (» *Fig. 1*) shows a comparison of the top five countries mentioned in map titles and descriptions on ls-portal.eu with the top five countries on farmingmod.com. As can be seen, Poland and Germany are the clear favourites on both websites, but the UK and France are slightly more popular on farmingmod.com, while the Netherlands and Russia are third and fourth on ls-portal.eu.

Conclusion

On their own, these findings make it clear that modders who create maps for *Farming Simulator 15* often choose to describe their maps as set in Germany or Poland, meaning that central and east European regions have a special importance in modders' imaginations of *Farming Simulator 15*'s agricultural spaces. But the findings produced by this distant reading perhaps take on their fullest significance when brought into conversation with political-economy, social science, and aesthetic research methods. Going back at least as far as *Farming Simulator 2011*, GIANTS Software has hosted "mod-contests" for each PC iteration in the series. When looking at the list of winners from 2015, we see trends that resonate with our meta-data findings: maps and machine brands with connections to Germany, Poland, the United States of America, and other European countries are well-represented among the winning mods. Further studies of the political economy of modding for *Farming Simulator* could use this distant-reading method to test whether the rules, structures, and awards for these mod-competitions create material and social feedback-loops which encourage modders to adopt certain national and regional places as the inspirations for their maps. Our meta-data findings also have significance for the study of *Farming Simulator* modding communities. Despite the fact that early versions of *Farming Simulator* were developed by a Swiss and German team, the prevalence of "Polish" maps suggests that further social-scientific studies of modding communities around *Farming Simulator* should investigate the importance of both German *and* Polish modding communities.

Our findings also have important implications at the level of aesthetics. When exploring the in-game rural spaces of several user-created maps, it can often be difficult to tell the difference between "German," "Polish," "French," or any other kind of map: most maps are composed of rural landscapes with large, open fields, rolling hills, paved and dirt roads, clusters of trees, a few houses or small apartment buildings, and the shops and points-of-sale which play an important part in the game's simulation of farming. Unless a player has first-hand experience of a certain place, there is very little *within* user-created maps to indicate that they are meant to refer to specific, real-world places. However, in light of the results of our distant-reading method, which shows that modders often frame their maps in reference to real-world places, small details in maps like road-signs and billboard, designed to mimic their real-world counterparts, take on increased aesthetic importance as markers of cultural specificity and authenticity. In this way, we can see that the rustic and rural spaces in user-created maps are often infused with larger political and cultural understandings of locality, regionality, and nationality, and serve as a good example of what Carlson and Corliss call the production of "cultural mythologies" (2011). In this process, cultural workers, such as modders, craft mythologies about cultural specificity through aesthetic objects, producing works about their own regions or nations for consumption abroad or

constructing mythologies about “foreign” places out of materials available to them in their own socio-cultural context. Our meta-data analysis strengthens aesthetic analyses of user-created maps by drawing our attention to the political significance of framing digital spaces in local, regional, and national terms.

Of course, there are many more questions that one could ask about modding practices and culture using this data-driven method, but this case study is meant to illustrate how distant reading can inform a variety of approaches to studying the structures, culture, and aesthetics of modding. Although this study has focused on user-generated maps, this method could also be used to study other forms of para- and meta-textual media that often shape our engagement with computer games, such as wikis, forums, and other social, user-created textual forms. Further development of this method would require scholars to grapple with the importance of other forms of media beyond text, such as screenshots and videos, which modders use to showcase their works and communicate what their mods are about. But even in the narrow application which I have presented here, I believe that this data-driven approach to studying modifications at scale represents a valuable contribution with wide application to how we understand mods, the culture of modders, and the creative media objects they produce.

Figure

Fig. 1: Graphic by the author.

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PlayStation Photography Towards an Understanding of Video Game Photography¹

Vladimir Rizov

Abstract The remediation of photography in video games has been growing in the extent of its integration into gameplay, and so merits further discussion. In this chapter, I propose videogame photography to be a continuation of photographic discourse and that its technological and practical specificities can be understood through a discussion of existing knowledge of photography. My goal is to avoid an essentialist view of photography and discuss its remediation in video games as a continuation of photography in general. Moreover, I claim that narrative is of great significance for conceptualising and understanding the remediation of photography in digital game worlds. Finally, I propose a model that builds on current understandings of gamic action and narrative in order to typologise game photography and provide a basis for future research.

Keywords Video game photography, gamic action, perspective, remediation

Video Game Photography

Video game photography is the practice of creating images of game worlds—through incorporated readymade in-game tools, hardware mechanisms (e.g. Nvidia's Ansel), modifying the game or even photographing one's screen. This practice is growing in popularity in one of the most widespread media in contemporary society—video games—and it needs to be positioned in the history and discourse of photography. The aim of this chapter is simple and twofold: first, I argue that photography is more than a practice of producing images and is, in fact, a discourse that requires a context

1 Thanks are due to Patrick Rupert-Kruse and Lars C. Grabbe for the first opportunity to present on this topic in the Moving Images conference in Kiel, 2017, where Derrick de Kerckhove kindly provided me with encouraging feedback.

in which to operate; second, I claim that video game photography (henceforth, VGP) should be understood in terms of gamic action and narrative in the sense of Alexander R. Galloway's work on games (2006). I posit that VGP, much like traditional forms of photography, is a discourse that is central to our understanding of video games, the use of perspective, and the production of images. In my argument, I will indicate some of the similarities between what will be referred to as traditional, camera-based photography and video game photography. Ultimately, the point is not what the differences and advances in VGP are but what it can tell us about photography as a whole. To do this, I propose a model of understanding VGP (see also Rizov 2017).

Video Game Photography, Aesthetic Logic, and Narrative

Academic work on the field has been limited in number (Poremba 2007; Giddings 2013; Moore 2014; Rokošný 2018; Gerling 2018; Möring and de Mutiis 2018), but efforts have already been made to discuss VGP's ontology (Giddings 2013) and its practice and relation to traditional forms of camera-based photography (Poremba 2007). Most recently, Sebastian Möring and Marco de Mutiis (2018) have proposed a model for understanding VGP in relation to the gameplay condition of a given game. Cindy Poremba has astutely observed the parallels between video game environments and conceptions of the photographer as what Susan Sontag describes as "a tourist in other people's reality" (2008, 33). Furthermore, Poremba examines the forms that the remediation of the photographic medium in video games take, as well as their significance in game space. She does this with an attention to "the fun of successfully constructing the look of a professional photo" (Poremba 2007, 56).

Poremba defines an important distinction: when it comes to the remediation of photography in video games, the actual environment is of little consequence. That is to say, 'actual' photography is not necessarily *about* reality; the fact that it is considered 'indexical' is, as Jacques Rancière points out (2004, 33), a historical shift in discourse. Similar to Olli Leino's discussion of the notion of "the gameplay condition" (2009), if one is looking at games, one must look at the player. Thus, if one is looking at VGP, one must look at the video game photographer. Understood this way, the successful remediation of photography in a video game can be understood as one of practical considerations, and as such is to be determined by the extent to which the photographic actions are carried across into virtual space, rather than the verisimilitude of the virtual. As Poremba makes the parallel to violent shooter games:

In terms of the enjoyment of photographic practice, the relative reality of the gamespace is less important than the ability to master the strategy, discovery, and skill central to the fun of successfully constructing the look of a professional photo (much as similar skills present in traditional shooter games recreate the fun and excitement of cinematic gunplay, predominantly divorced from the reality of killing) (Poremba 2007, 56).

Although my primary concern here is not the enjoyment of photographic practice, Poremba points to the *success* of photography's remediation as lying in its practical choices and affordances. Her understanding prioritises photography as a practice, and its material and technological operation—i.e. whether it is based on a photosensitive apparatus or not—as only secondary. By following this approach, I build on Rancière's example of refusing "one of modernism's main theses: [that] the difference between the arts is linked to the difference between their technological conditions or their specific medium or material" (2004, 31). Thus, I argue that photography "was not established as an art on the grounds of its technological nature" (ibid., 33) but rather, it has been formulated as a discourse under what Rancière calls "an aesthetic logic of a mode of visibility" (ibid., 34). In other words, photography is more than just a practice of creating images but an intersection of material reality, aesthetic codifications, and social relations.

In this sense, I posit that the morphing of photography into VGP is to be understood as a continuance, not a rupture, of this aesthetic logic. The symptoms of this 'mode of visibility' have been present for a long time and are only exaggerated in the context of the virtual. For example, according to Vivian Sobchack, photography, broadly speaking, can be understood as a mode of "unprecedented *visibility*" that has been intimately tied to the hegemonic cultural logic of capitalism at any given point in time (emphasis in the original, 2016, 96). In this sense, photography has also been deeply linked with a colonial regime of othering and is intimately interwoven with what Jean-Louis Comolli describes as "a geographical extension of the field of the visible and the representable: [...] the whole world becomes visible at the same time that it becomes appropriatable [sic]" (Comolli as cited in Sobchack 2016, 96). Put simply, photography itself is premised on an unequal relationship between photographer and the subject in the first instance, expressed chiefly through the subject's lack of control over the circulation of their images (Azoulay 2019). For the sake of my argument on VGP, it remains important to stress that the camera remains a tool for the privileged in the process of subordination, control, and their reproduction (see Rizov 2020a). On one level, VGP perpetuates the logic of unprecedented visibility by contributing to the rise of virtual photography (understood here broadly as any photography that happens in a digital environment), thus allowing photography to colonise and function in a new space—the game world. On another level, VGP continues this aesthetic logic

through its operation of photographic techniques rooted in the history of said colonial practices. With regards to the latter aspect of this continuity, Solomon-Godeau claims that the camera is linked to “mastery, possession, appropriation, and aggression” (1991, 181). This continuity in VGP is evident; for example, the camera becomes a weaponised tool, such as in *Bioshock* (2k Boston 2007), or the avatar simply taking photographs of their environment, such as in *Watch Dogs 2*’s (Ubisoft 2016) trophies rewarded for tourist selfies.

An exploration of the use of photography in video games from a purely gamic point of view is bound to omit its discursive aspects. Undoubtedly, “*games are actions*” (emphasis in the original, Galloway 2006, 2) and, according to Espen Aarseth, they are “both object and process [...] they can’t be read as texts or listened to as music, they *must be played*” (emphasis added by the author, 2001, n.p.). However, in order to properly understand the significance of a given action, an awareness of the context in which their meaning is enacted and negotiated is necessary.² As Galloway points out, gamic action is inevitably immersed in a “total world of narrative action” (2006, 7), or diegesis. In terms of the work of Paul Ricœur, this world of narrative action is a form of video game emplotment, which “permits an intuitive grasping together [...] of otherwise heterogeneous elements” (Dowling 2011, 5). By exploring the convergence or complete divergence of gamic action and narrative, a game world may be properly understood through its “*incessant changeability* in which, it seems, everything ultimately remains the same” (emphasis in the original, Bown 2017, 9).

The photographic remediation in video games remains an underexplored issue precisely in relation to its narration of action—in this case photographic action. For instance, while Möring and de Mutiis propose a model of the “types of photography in video games” in relation to Leino’s notion of “the gameplay condition” (2018, 74), I propose a typology that privileges action and narrative/diegesis as central concepts. Möring’s and de Mutiis’s focus on the gameplay condition tends to privilege a distinction “between practice-based and content-centred approaches” of remediating photography (ibid., 77), which, I argue, fails to engage meaningfully with the persistence of photographic discourse in VGP.

Namely, an approach to understanding VGP that ignores the role of narrative is likely to omit from its discussion the plurality and nuance of photographic discourse. The mere enumeration of photographic terms or camera affordances that are present in VGP ignores the context in which they are usually understood, as well as the role

2 One cannot help but think of novelist Juan Pablo Villalobos’ Quesadillas (2013) and the moment in which Orestes, the main character, encounters an Atari console: “The world was ruled by a band of incredibly dull Aristotelians. I didn’t understand where the fun was other than in verifying that the device always did what you told it to. Was it the paradox of having invented a contraption whose fantasies served to verify the rules of reality?” (ibid., 42)

they play in a video game's narrative. For example, the role of photography in *Red Dead Redemption 2* (Rockstar Games, 2018; henceforth, RDR2) is much more complex than its relation to the gameplay condition. Namely, photography is a central part of the game's historical portrayal of the Wild West and the social changes that industrialisation brought at the turn of the nineteenth century (for RDR2 in relation to its historical accuracy, see Rizov 2020b). This expresses itself in eight distinct, but not exhaustive, instances: a) in the game's loading screen, which shows a fast-forwarded development process of a photograph; b) in the game's use of a pinhole camera (with anachronistic affordances—i.e. impossible at the time shutter speeds, aperture settings, and thus exposure time, etc.); c) the game affords the player to be photographed by an in-game photographer in a studio reflective of the period; d) in the game's conveyance of photographic history³ through a series of collectible cards; e) in a quest centred around helping out a landscape photographer; f) an advert in a shopping catalogue; g) the self-portrait option of the in-game pinhole camera; and h) the pause menu (» *Fig. 1*).

Although images 1a to 1h are directly linked to the gameplay, image 1a can be seen as the suspension of gameplay, or a pre-gameplay condition of the game in the form of a loading screen. Nevertheless, the example of image 1a contributes significantly to the experience of the VGP practices, or gameplay affordances, behind images 1b–1h. Namely, 1a sets up the world of RDR2 as both something to be photographed and something that *could* be photographed. This way, the loading screen directly simulates a sped-up development process of a photograph, as well as informs the engagement with the game that the player is afforded. This is also relevant on a narrative level, as it frames the game's world in relation to a (photographic) discourse of historicity that is deeply interwoven with the colonial undercurrent of the industrialisation of the Wild West.

With this in mind, photographic remediation in video games should be understood as more than the practice of photography or the content of photographs as Möring and de Mutiis argue (2018, 77), but also as being deeply related to photographic discourse and the *use* of the photograph as “an object in a context” (Sontag 2008, 82). This is not a new view in photographic theory. Alan Sekula has referred to a photograph's indeterminate meaning, arguing that “any photographic message is necessarily context determined” (2016, 4); John Tagg has asserted that photography has no identity of its own (1988, 63), and any understanding of it would inevitably vary according to the discourses and power relations that invest it (see Edwards

3 The series of collectible cards that lists the number of technological innovations of the nineteenth century evoke the broader narrative of industrialisation and its role in the transfiguration of the Wild West. This point, more broadly, reflects the role that photographic discourse (as a technology-based medium) can be central to understandings of history and progress.

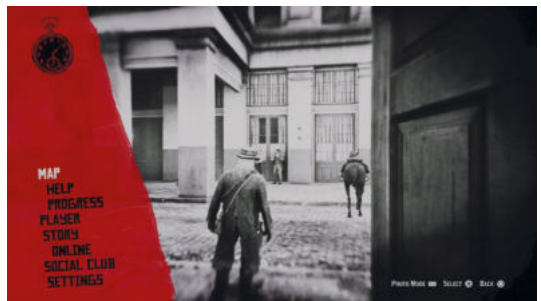
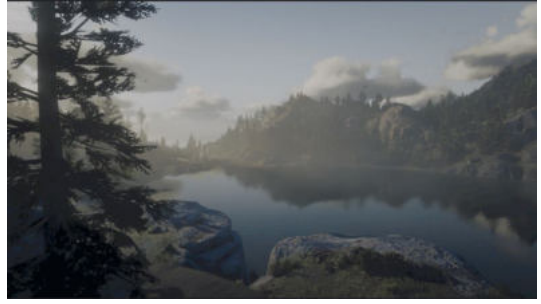


Fig. 1 *Red Dead Redemption 2*, remediations of photography: (1a) top left, loading screen; (1b) top right, in-game camera photo; (1c) second row left, photographer studio portrait; (1d) second row right, collectible card; (1e) third row left, photographer quest cinematic; (1f) third row right, magic lantern advert; (1g) self-portrait using in-game camera; (1h) pause menu.

2001, 11). Put simply, image 1a, although not part of the gameplay, *is* part of the narrative, and as such, it informs the gameplay condition of vGP in RDR2. Moreover, images 1b–1h further reinforce the point that photography is both a tool in the world (where photography is something that happens *inside* the game’s world and narrative) and a discourse that shapes the interaction with the game. Whether RDR2 is a colonialist fantasy is beyond the scope of this chapter. However, it should be noted that it certainly exhibits the feats of one—the open world, both currently being warped by industrialisation and in places untouched by humans, is nostalgic and indicative of photography’s anxiety about the passing of history and its failure to document its changes (Edwards 2001).

RDR2’s articulation of photographic discourse, although complex and comprehensive, is not entirely exceptional. Games such as *Life is Strange: Episode 1* (Dontnod Entertainment 2015), *Firewatch* (Campo Santo 2016) or *1979 Revolution: Black Friday* (iNK Stories 2016) all engage in remediations of photography that, to various degrees, engage with the materiality of photographic practice, as well as its reflective aspect. In *Life is Strange*, the player is merely prompted to make the binary decision whether to take a photograph in the first place. In *Firewatch*, the avatar is given a disposable camera (again, with no practice-based technological considerations much like real-life use of a disposable camera) and the player is even afforded the option of getting the photographs taken in-game printed as ‘actual’ photos. In *1979 Revolution: Black Friday*, the role of photography in the Iranian revolution of 1979 takes a central position in the game’s narrative—to the point that the avatar is a photographer. Here, most interesting is the use of photographs as material and social objects that are rooted in history. The main protagonist is prompted to take photographs that simulate historic photographs of the events of 1979 in Tehran, thus firmly rooting the *1979 Revolution: Black Friday*’s iteration of vGP in a historical discourse of documentary photography and pedagogy.

On the basis of this, I propose an understanding of vGP that is based on the notion of photographic action and photographic discourse. Following Poremba’s framing of vGP as consisting of “strategy, discovery, and skill” (2007, 56), this understanding acknowledges photography as more than a technology-based medium. To do this, I draw on Max Weber’s constructivist formulation of ‘social action’: “Such behaviour is ‘social’ action where the meaning intended by the actor or actors is related to the behaviour of others, and the action is so oriented” (2019, 79).

With this in mind, photographic action is to be understood as action where the meaning of the practice, i.e. the strategy, discovery, and skill is related to the affordance of photographic capture. In the case of vGP, it is important to note that the gameplay condition of games should be understood as always potentially photographic. Instances of vGP play, understood this way, are not “transformative play” as Möring and de Mutiis claim (2018, 81) but rather a substantial indication of the degree to which video

games and photography are interwoven, as well as the value of the notion of *photomedi-ation* (Zylinska 2016). Moreover, Weber's formulation goes on to clarify that social action is, in fact, organised and that there are "structures that condense and perpetuate contingent actions into enduring social processes" (Tribe 2019, 75). The manner in which those are to be understood is the goal of the next section.

The Model

In order to explore the interplay between narrative and action, I will provide a model that examines their convergence and divergence. In order to do so, I will rely on Galloway's model of gamic action, in which he provides a typological classification by using both narrative and action (2006). An emphasis on action, i.e. where a video game is "an *action-based* medium" (emphasis in the original, *ibid.*, 3), helps to distinguish between agencies on the level of the machine and the operator. For instance, to quote Galloway: "[W]inning *Metroid Prime* is the operator's act, but losing it is the machine's" (*ibid.*, 5). Although the two actions manifest as "a unified, single phenomenon" (*ibid.*), the distinction on an analytical level can prove useful. Furthermore, the actions, either by the machine or the operator, acquire different significance in relation to the narrative. Following Galloway's work, I use the terms diegetic and nondiegetic to account for this—"the diegesis of a video game is the game's total world of narrative action" (*ibid.*, 7). For example, one can distinguish between a move act (a diegetic operator action) that the player has fulfilled and an ambience act that is algorithmically determined to play out as long as the game is running (a diegetic machine action). As can be seen in Galloway's model, both actions occur in the diegetic world of the game but originate in a different agency (» *Fig. 2*).

On this basis of gamic action, I propose a similar understanding of the remediation of photography in video games. Photographic action can be either built into the world, or extrinsic to it only achievable by hacking; it can be built into the diegesis or "total world of narrative action" (Galloway 2006, 7) of the world, or be built into the game itself but not the diegetic game world (» *Fig. 3*). For example, the contrasting examples among the games mentioned are *RDR2* and *Life is Strange: Episode 1*; in the former, the player has access to a photographic camera at will (once they have gained access to it in the storyline), while in the latter, the player can enact photography only when prompted.

In terms of nondiegetic action, photographic remediation becomes slightly more complex. For example, instances of nondiegetic, machine photographic actions are done through a supplementary photo mode built into the game (for example, *Control* (Remedy Entertainment 2019)), but are not part of its narrative action. In

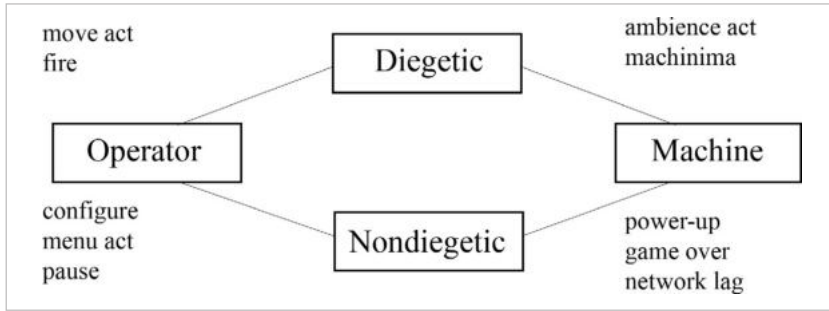


Fig. 2 Alexander R. Galloway's diagram of diegesis and action.

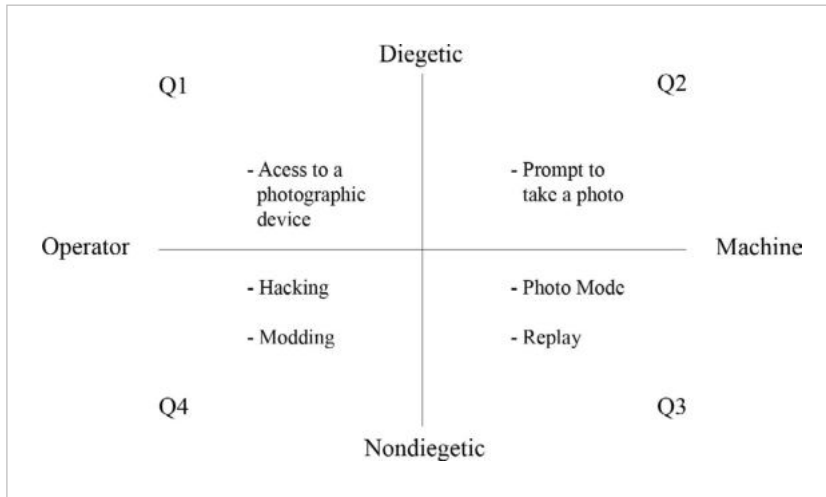


Fig. 3 Adapting Galloway's model (» Fig. 2) in relation to video game photography.

order to access the photo mode, the operator must suspend the video game by pausing it, and through what Galloway calls a “menu act” (2006, 37) to enter a photo mode. This classification of the photo mode may appear somewhat contradictory in terms of Galloway's graph (» Fig. 2) as it requires an operator act in order to access what is an essentially machine act. Although it might appear that a photo mode is an act that is precipitated by the operator, here I make the distinction between an operator-initiated machine-integrated act and an operator-initiated machine-extrinsic act. To make this clear, it is necessary to understand the example of the convergence of operator, nondiegetic photographic remediation—namely, modding, and hacking video games with the purpose of producing images (» Table 1). While Galloway seems to assume that gamic actions occur only in the game, I highlight instances in which the game script is made to stop running with a nevertheless gamic action

Table 1 Photographic Gamic Action. Elaborating the model through examples (graphic by the author).

Type of Action	Description	Shape of Action	Quality of Action	Emblematic Examples
Diegetic operator act	Avatar possesses photographic device that can be used at will.	Free Play	Optional	<i>Watch Dogs</i> series, <i>Red Dead Redemption 2</i> , <i>Firewatch</i>
Diegetic machine act	Operator is obliged to do a photographic gamic action in order to progress in-game.	Predetermined Play (Process)	Mandatory	<i>Life is Strange</i> , <i>1979 Revolution: Black Friday</i> , <i>Pokémon Go</i>
Nondiegetic machine act	Built-in photographic mode accessible only through suspension of game diegesis.	Code	Operator-precipitated, game-integrated	<i>Horizon: Zero Dawn</i> , <i>Forza Horizon 3</i> , <i>Control</i>
Nondiegetic operator act	Suspension of game code running with purpose of modifying game for image production.	Hack	Operator-precipitated, game-extrinsic	Duncan Harris, Leonardo Sang, K Putt, Nvidia's <i>Ansel</i>

in mind, e.g. through modding a game. Following the definition of photographic action with regards to VGP proposed above, the manipulation of a game, such as editing files, rendering the game unplayable in high resolution, is, in fact, indicative of photographic practice, and strategies of implementing the latter into the context of video games. VGP practitioners such as Duncan Harris, Leonardo Sang or K Putt engage in this exact practice. The typology demonstrated in this section is one in progress and is to be updated with further historical study of the medium of video games. The table above illustrates an elaboration of photographic gamic action and emblematic examples.

Final Remarks

The fact that a photograph is a discursively constituted object is an important point to reiterate. It is tempting to assume that this points to the equivalence of either kind of photography. One might even draw parallels to films and to be more precise, Alfred Hitchcock's *Rear Window* (US 1954). It is due to the main character's immobility, as Sontag recounts, that he must record what he sees with a camera; precisely, because he is deprived of the ability to act, he feels it "even more important to take pictures. Even if incompatible with intervention in a physical sense, using a camera is still a form of

participation” (2008, 8). In vGP terms, using a camera is still playing the game, just as much as it is photographic action.

Photography constitutes, and is constituted of, this aspect of the ‘mode of visibility’ that is political and central to understanding the current conjuncture’s “regimen of truth”⁴ (Fontcuberta 2014, 7). Importantly, the photographer is the chief driver of this expansion of visibility. In Sontag’s words, “[t]he photographer is always trying to colonize new experiences or find new ways to look at familiar subjects—to fight against boredom. For boredom is just the reverse side of fascination: both depend on being outside rather than inside a situation, and one leads to the other” (2008, 33).

To make another point concerning video games and *photomediations*, vGP is the convergence of observation and action in experience. It could be said that photography, in its current, non-virtual form, even outside video games, has become an in-between act. One no longer consumes without the mediation of said consumption; one no longer experiences unless one’s presence is made visible; and so on. The very medium of video games can be understood as a mediation of action; vGP, in this case, is particularly telling. Although ontologising the technological difference might be particularly tempting, in this paper I have followed Comolli’s formulation of cinema as a ‘machine of the visible’ and tried to apply this to the instance of vGP, where: “If the social machine manufactures representations, it also manufactures itself from representations—the latter operative at once as means, matter and condition of sociality” (1980, 121).

Thus, we arrive at the ontological point about vGP—video games themselves are a fundamental remediation of the photograph, the image. The significance of vGP does not lie in its move beyond the image, or the abandoned purity of the original light-image but in its fundamental and ontological reification of images, to the point where one no longer talks about “realities understood in the form of images [but] realities understood *to be images*, illusions” (emphasis added by the author, Sontag 2008, 119). Ultimately, to echo Sontag once more, video game photography reveals to us that we are tourists in virtual worlds (*ibid.*, 44).

4 As noted, vGP is a continuation of a mode of visibility which photography originated in the 1840s and, as such, vGP is just an exacerbation of traits that are already inherent in photography. This mode of visibility is no longer tethered, in its current iteration, to the idea of evidence and to quote W.J.T. Mitchell: “images are no longer guaranteed as visual truth” (2015, 49). Yet, as the photographer Joan Fontcuberta asserted: “the products of the camera are materials that [...] take on [...] a symbolic value that we do well to analyse in attempting to judge the regimens of truth that every society assigns itself” (2014, 7).

Figures

Fig. 1: Screenshots by the author, Rockstar Games 2018.

Fig. 2: Galloway 2006, 37.

Fig. 3: Graphic by the author.

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2. Topoi, Topographies, and Topologies Spatial Structures of Game Worlds

The *World-Shaped Hall*

On the Architectonics of the Open World Skybox and the Ideological Implications of the *Open World Chronotope*

Marc Bonner

Abstract This chapter is a transdisciplinary study on the architectonics of open world games and has a twofold aim. First, the game intrinsic space of open world games and their function as illusionary space will be analysed based on technological and structural aspects of the *skybox* and its non-linear interior landscape. Thus, open world games will be defined as *world-shaped hall*. Second, the spatiotemporal dynamics within the *world-shaped hall*, namely the differential of power between player-induced courses of action and developer-induced guidance systems and governing strategies will be explored. They embody the topology and topography of what will be defined as the *open world chronotope*. Consequently, the *world-shaped hall* and the *open world chronotope* are interrelated and define the media-specific characteristics of open world games. This chapter then lays the foundation for further studies of open world games specifically and game space in general.

Keywords Open world, skybox, world-shaped hall, architecture, Crystal Palace, chronotope, space-time, ideology, game design, Deleuze and Guattari, Bakhtin

Introduction—On the Architectonics of the *Skybox*

The *skybox* surrounds the three-dimensionally arranged game world by its cubic or spherical volume. In its function and structure, it is a type of architecture Hans Hollein already called for in 1968: according to him, architecture as such must be re-framed and its materials and means extended. The key momentum has to be the effect

of information (“Informationseffekt”), which allows the experiencing of architecture through other media (1968). Here, Hollein contextualises the example of a jet fighter pilot’s head-up display (HUD) as a building of minimal dimensions, which directly encases a global environment. Such architecture broadens one’s organs of perception via its telecommunication accesses in order to relay vast and faraway areas immediately to the pilot. According to Hollein, humankind has always used architecture to physically and psychologically amplify its sphere of action and thus to regulate its environment into an anthroposphere. In the same year of Hollein’s radical demand for rethinking architecture, Ivan Sutherland introduced the first head-mounted display, *Sword of Damocles*, which allowed a novel experience of three-dimensional worlds. Both developments, among others, build the foundation of today’s VR goggles and of complex digital game worlds.

Interestingly, most game worlds use an “informative guidance system” (Rotzetter 2018, 173) in the form of augmented reality (AR) or interfaces that simulate a HUD in order to help the players navigate within level structures.¹ This applies even more to vast non-linear architectures of open world games.² Lev Manovich, among others, highlights spatial navigation as crucial distinction from older media (2002, 183): “[T]ime became a flat image or a landscape, something to look at or navigate through. If there is a new rhetoric or aesthetic possible here, it may have less to do with ordering of time by a writer or an orator, and more with spatial wandering” (ibid., 78).³

Although the *skybox* is constructed as a cube or sphere, it is experienced as a seemingly undefinable vastness by the players’ point of view within the game world. Especially at the dawn of three-dimensional game worlds in the 1990s, such as *Quake* (id Software 1996), *Half-Life* (Valve Corporation 1998) or *Unreal Tournament* (Digital Extremes/Epic Games 1999), the *skybox* can evidently be distinguished from more detailed textures and more sculptural polygon meshes of the *active level structure*⁴ due to technical limitations. In those game worlds, the *skybox* appears roughly pixelated, has a limited colour palette, and its sides are plane, two-dimensional

1 According to Francine Rotzetter, the “informative guidance system” informs players on their position within the game world and their relation and distance to the next waypoint or to overall points of interest. Thus, it affects the sphere of action. This system uses symbols, interfaces, (mini) maps and so forth. For more on that and the five other types of nonverbal guidance systems, see Rotzetter 2018.

2 See Bonner 2018.

3 This will also be crucial for later arguments in the context of the *chronotope* and of Tim Ingold (2011), and Gordon Calleja (2011).

4 The term *active level structure* refers to all spaces, volumes and objects of a game world the players traverse through, interact with and appropriate. These walkable areas are defined by the designers via *navigation meshes* and help also to organise the wayfinding of non-player characters (NPCs).

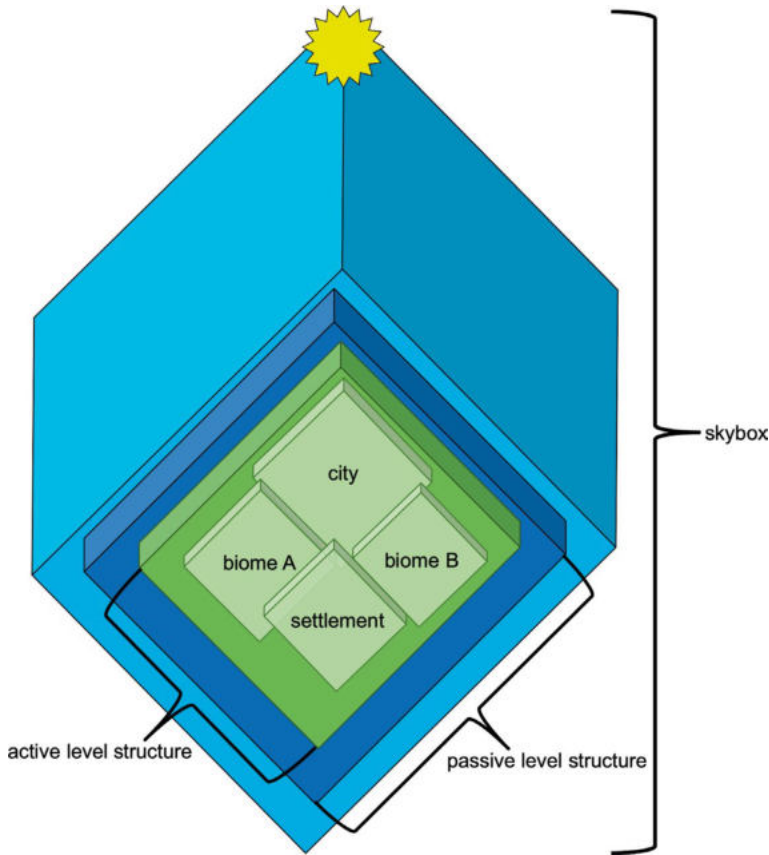


Fig. 1 The skybox principle including active and passive level structure.

layers. In today's computer games, dynamic weather simulation, day and night cycles, volumetric cloud generation as well as plastic, three-dimensional *passive level structures* like mountain ridges, thickets or endless oceans obfuscate the *skybox* and its function as the edge of the world (» Fig. 1). Hence, a *passive level structure* functions like the *faux terrain* known from panoramas or dioramas (Jost 2015, 42). As a predetermined non-walkable area full of sculptural objects, it acts as an intermediary between the *active level structure* and the large-format panoramic *skybox* in order to conceal the junction from one to the other by staging a fluid transition. According to Kilian Jost, in such a way the illusion of infinitude and dissolution of boundaries is gained (ibid.).

The *skybox* contains the game world while implying undefined vastness as worldliness (in a non-religious manner) by topoi of evocative horizons, mountain ridges or

skylines.⁵ Most recently, some game worlds like *Titanfall 2* (Respawn Entertainment 2016) or *Prey* (Arkane Studios 2017)⁶ among others, evidently stage the constructedness of the *skybox* principle. Here, players experience game space as an illusionary space and evident simulation situation in order to reflect on what is real, on the level of both fictional and virtual.⁷ In this way, these game worlds become metareferential by scrutinising and highlighting their very status and properties on a meta level and via science fiction topoi. Especially *Titanfall 2*'s single-player level Into The Abyss stages a megalomaniac underground facility called World Foundry that, like a chimera of Fordian assembly lines and an IKEA store with its themed areas, assembles prefabricated houses to urban districts for outer world colonies. After traversing the moving geometry of the assembly line, players also fight within and around chambers or so-called simulation domes of the IMC Dynamic Testing Facility (» Fig. 2). They are built for training purposes and enclose prefabricated urban terrain parts and are made of hexagonal high-tech tiles that project a vast green landscape complete with a cliché cloud-covered blue sky. The projections are not only evidently distorted due to the spherical or cubical volume of the small spaces but also look like desktop wallpapers of old operating systems lacking detail and depth of colour. Thus, they embody a stark contrast to the dark surrounding cave system and facility architecture, referring to the properties and shortcomings of (old) *skyboxes*. Experiencing those domes from within and entering them through recesses in the domes, players obtain multiple perspectives on the interior and exterior properties of the simulation domes that also embody the game intrinsic space itself. The make-believe or simulation situation is also staged by domes loading a cloudy sky and green landscape onto tiles and broken tiles hanging from the in-game *skybox*. In addition, players can gaze at “illegal view” inscriptions on the projected landscapes while looking at the nooks and crannies of the simulation dome or by shooting at the tiles, causing a short-time malfunction.

- 5 The concept of worldliness or worldness (“Weltlichkeit”, “Welthaftigkeit”) was initially adapted to game studies by Lisbeth Klastrup (2003). She uses the term “worldness” in order to grasp and describe collaborative experienced events and shared actions within the worlds of Massive Multiplayer Online Games (MMOGs). To her, worldness is primarily constituted by the aspects of consistent online game worlds, and play as shared participation within the latter (2009). Recently, Torill Elvira Mortensen und Kristine Jørgensen adapted Klastrup's concept to analyse transgressive experiences in single-player game worlds (2020, 58, 100, 104, 149). Both authors use worldness in order to define the game world as an environment with media-specific logics that become real to the players and evoke exploration of the game world's boundaries (ibid., 149). In contrast to Klastrup, worldliness here loosely follows Mortensen's and Jørgensen's approach, as it covers some aspects of the worldliness of open world games as a single-player experience. Worldliness then means perceiving and navigating a coherent, non-linear network of places staging a vast topography full of natural and cultural landscapes and thus embodying a certain worldview of the man-nature dichotomy.
- 6 For more on *Prey* and its complex story on self and other as well as the metareferential qualities, see Backe 2018.
- 7 For a different take on this topic in an indie game, see Beil's chapter in this book.



Fig. 2 Displaying the properties of the skybox in *Titanfall 2*.

Fig. 3 The frustum culling principle in *Horizon Zero Dawn*.

As all-embracing architecture, the *skybox* therefore stands in the tradition of other visual illusions that were established in painting, architecture, theatre, and film throughout the centuries (Günzel 2015, 66). Here, Andrea Pozzo's Baroque *trompe-l'œil* paintings as well as *matte paintings* of analogue film production can be contextualised. The latter depend on predefined fixed camera points of view in order to implicate spatial depth and breadth.⁸ As players can navigate game space more or less freely and thus choose multiple point of views in succession on their own, the *skybox* enables a kind of inverse in-the-round view within its boundaries.

Subsequently, the study will focus on open world games. In the form of archipelagos bathed by the ocean, steep mountain valleys or staggered cityscapes, they flaunt the biggest coherent level structures and thus *skyboxes* full of *points of interest* (POI)⁹, clustered places as well as road and path networks.¹⁰ Rolf F. Nohr attests such game spaces, whose topographies are designed for the most possible openness and overall layout as fetishism of space—"Raumfetischismus" (2013, 7, 18).¹¹ According to him, the landscape then becomes an end in itself, becoming an independent momentum of world building, game design, and play (*ibid.*).

In order to establish a fluid audiovisual staging of the game world despite the technical and hardware restrictions, multiple algorithms regulate appearance and quality of in-game objects in different distances as well as visibility range in the open world. Hence, due to the *frustum culling* process, the game world only exists ephemerally within the field of view of the virtual camera (» *Fig. 3*). This process computes which polygon meshes, effects, sounds, and mechanics will be depicted and initiated in that moment. In earlier computer games like *Grand Theft Auto III* (Rockstar North 2001), a quick turn of the virtual camera forces the game engine to generate pop-up objects and consequently delays loading of textures and polygons in the vicinity. In games with

8 A range of examples exist throughout the history of film, which made viewers believe the buildings on the silver screen were physically real architecture. Among the most famous examples are the Vandamm house that was supposedly built on Mount Rushmore in *North by Northwest* (D: Alfred Hitchcock, US 1959) or the intricate megalomaniac halls of the death star in *Star Wars Episode IV: A New Hope* (D: George Lucas, US/GB 1977).

9 *Points of interest* refer navigational waypoints or reference points, which are mostly embodied by vertical structures, evocative sights or distinct formations. These places are fixed nodes within the topology of the game world and feature quest givers, quests, items, additional information, fast travel points or navigational guidance.

10 One of the first computer games depicting a three-dimensional game world that clarifies the digital specific of game intrinsic space right from the start is *Battlezone* (Atari 1980). Players steer a tank in first-person perspective through a sparse vector graphics landscape, but cannot reach the mountain ridge on the horizon, no matter how long they drive towards it. Therefore, *Battlezone* shows that Euclidean laws have to be programmed for specific aspects of a computer game world experience in order to stage spatial logics.

11 See also Nohr's chapter in this book.

long lines of sight, *fogging* is a method to conceal such pop-up and loading problems. In today's open world games, the fluid depiction is enabled via the "view-dependent" *level of detail* (LOD) process (Cudworth 2016, 127–42).¹²

For example, this method of data streaming governs four distinct models of different detail capacity embodying the very same building due to the player's distance to it. Seen in the faraway distance, the building can be a simple bitmap, but while approaching it, a low-poly 3D model will dissolve the bitmap at a certain distance. This blend-in process of LOD is repeated up to the most complex and sculptural model of the building when the player is in close range or right in front of it, and a traversable interior or general interaction has to be enabled (see Manovich 2002, 206). Consequently, the game world only exists in the code as a coherent entity and pretends to be a spatiotemporal continuum in the eyes of the players via data streaming and AR interfaces.

Like Hollein, Juhani Pallasmaa defines architecture as a world-regulating medium which organises and governs humankind's sphere of action (2012, 68). Accordingly, in the sense of Pallasmaa, game intrinsic space is pure affordance or a staging of multiple calls to action, in that it exceeds its geometrical and measurable ontology towards a placeness.¹³ Especially the worldliness of open world games can be divided into three basic topographical types that also embody the very foundations of the media-specific adaption of Mikhail Bakhtin's *chronotope* concept (2014): *rural open world structures* such as *Far Cry 3* (Ubisoft Montreal 2012), *Horizon Zero Dawn* (Guerilla Games 2017) or *Red Dead Redemption 2* (Rockstar Studios 2018) focus on the staging of a *striated wilderness*¹⁴ as a romanticised, pristine, and/or hazardous depiction of nature with diverse biomes¹⁵ and only few settlements or single buildings that play a minor role. Here, the experience of natural as well as cultural landscapes and their undulating topography is an end in itself. In addition, like Hollein's idea of a future architecture, most open world games bring faraway biomes together in one place (see Bonner 2018). *Urban open world structures* like in *Assassin's Creed: Unity* (Ubisoft Montreal 2014), *Tom Clancy's The Division* (Massive Entertainment 2016) or *Marvel's Spider-Man* (Insomniac Games 2018) stage a coherent cityscape that can focus on vertical aspects and

12 These are the very mechanics addressed in the introduction of this anthology that characterise the architectonics of game worlds – their simultaneity as low-poly ruins, constructed navigable buildings and data sets stored in code and database.

13 Here, one can differ between *architectural determinism*, *probabilism* or *possibilism* (Strange and Banning 2011, 13–14). For an adaption of this categories into game analysis and a contextualisation within a broader discourse of spatial perception see Bonner 2019a.

14 For more on the concept of the *striated wilderness* see Bonner 2018.

15 A biome is a biogeographic realm and refers to the correlation and interdependency between flora, fauna, fungi and micro-organisms to soil and climatic conditions in a certain combination and within a certain area of Earth, like the alpine biome, the tropical savannah biome or the boreal forest biome (see Woodward 2009, 1–36).

parkour mechanics. Like the biomes of the *rural* type, the *urban open world* combines different architectural styles for distinct districts/neighbourhoods. Mostly, the depicted city is a media-specific distillation or a loose citation of a physically real cosmopolitan city (see Bonner 2015). *Rurban*¹⁶ *open world structures* like *Grand Theft Auto V* (Rockstar North 2013), *The Witcher 3: Wild Hunt* (CD Projekt Red 2015) or *Assassin's Creed Origins* (Ubisoft Montreal, Quebec 2017) constitute a hybrid mixture of the two types above. They can have a balance between big and detailed in-game cityscapes and a richly sculpted unspoiled wilderness or pastoral nature. Thus, game worlds of this type most evidently stage a *wilderness-frontier* in the sense of the man-nature/urban-rural dichotomy.

The Open World Skybox— From the Cave Metaphor to the *World-Shaped Hall*

Markus Rautzenberg persuasively compares the constitution of the architectonics of game worlds and their *skyboxes* with the structure of caves by including Plato's allegory of the cave and philosopher Hans Blumenberg's inverted interpretation of it (Rautzenberg 2015). He argues that, despite the vast and non-linear traversable game spaces (like in open world games), it is still impossible for today's game worlds to escape or evade the cave, namely the all-enclosing impenetrable celestial sphere of the *skybox* (ibid., 250). For Rautzenberg, the *skybox* is the final frontier of the world that prohibits exploration beyond. Thus, all three-dimensional game worlds take place in caves, independent from the depicted world and its sign system. He bases his argument on the observation that the two most crucial ludic elements, exploration and cartography, are indispensable for the science of studying caves—speleology (ibid., 251). Rautzenberg feels vindicated in the example of the so-called CAVE systems (Cave Automated Virtual Environment) with their back projections on several sides of a restricted room (ibid.). Complete with tracking technology (motion capture, VR goggles), they function as three-dimensional panoramas in research and computer-aided design. In comparison with 3D scans of complex branching and maze-like cave structures (see Zlot and Bosse 2014), Rautzenberg's metaphor is especially applicable to linear and more or less branching level structures like in *Quake*, *Half-Life*, *Bioshock* (2K Boston 2007) or the intricate brutalist architecture of *Control* (Remedy Entertainment 2019). In

16 *Rurbanism* is a term from urbanism and means the dense settling which blurs clear boundaries between urban and rural areas. It is used in order to rethink inscribed post-industrial or post-agrarian society as well as overcome the established man-nature dichotomy.

context of the architectonics of open world games, the cave metaphor is only true on a very basic level of media-specific characteristics and is thus inadequate.

In order to clarify the potential of the inverse in-the-round view of the open world *skybox*, it is helpful to look at Giovanni Battista Tiepolo's ceiling fresco *Apollo and the Continents* in the Würzburg residency. Finished in 1753, it covers an unsupported vault spanning 30 metres in length and 18 metres in width and is only fully perceivable through changing one's own point of view several times, horizontally and vertically, within the grand staircase. The succession and combination of viewpoints while ascending or descending foster the viewers' explorative behaviour. Christoph Asendorf understands Tiepolo's fresco as a total earthly ("gesamtirdisches") panorama, a virtual firmament that offers an inverse bird's eye view (2017, 241). To favour the spatial illusion, a *skybox* should not expose its actual volumetric dimension and geometric form. *Skyboxes* of early 3D game worlds broke the illusion by tilts of the cubical variant where two planes of the sky met or by far too curved clouds in the spherical variant.

This leads to the 1851 world exposition's *Crystal Palace* built by Joseph Paxton in Hyde Park, London. The building's structure captivated eyewitnesses through its clear and dematerialised design. As a type of megalomaniac glasshouse, it is based on a modular system that was governed by the biggest mass-produced glass panel possible at the time. Thus, the structure resembles the Cartesian grid which is also the backbone of digital game worlds. The dimensions of the filigree supporting framework amount to 563 metres in length, 124 metres in width, and 32 metres in height. Architectural historian Siegfried Giedion describes this non-linear experience area as a building type unprecedented in the nineteenth century (2007, 179–83). Most impressions of the architecture praise its illusionary effect. Eyewitness Lothar Bucher wrote of his experience of the interior:

We see a delicate network of lines free of any indications that would allow to get an idea of the distance between the eye and the actual size. The lateral walls are too distant from each other to catch them within one single view and instead of gazing at an opposing wall, the eye wanders along an infinite perspective that vanishes in mist. We do not know if the structure floats one hundred or one thousand feet above our heads or if the ceiling is one plane surface or constituted by multiple little roofs, as the cast shadows are absent that would otherwise help to understand the optic nerve's impressions (translated from German by the author, Bucher 1851, 10).¹⁷

17 "Wir sehen ein feines Netzwerk von Linien, aber ohne irgendeinen Anhalt, um eine Vorstellung der Entfernung vom Auge und der wirklichen Größe zu gewinnen. Die Seitenwände stehen zu weit ab, um sie mit demselben Blick umfassen zu können, und anstatt über eine gegenüberliegende Wand streift das Auge an einer unendlichen Perspektive hinauf, die im Dunst

This experience mirrors not only crucial aspects of the *skybox*' functionality but also the condition of the open world game as a simulation of worldliness. Sun, sky, and the surrounding landscape permeate through the vitreous structure of the *Crystal Palace*'s interior and together, they generate a spatial continuum of vague dimensions. In this way, the architecture intermingles interior and exterior through daylight, and suggests openness and vastness. Although the interior cannot be grasped from a single point of view, the environment is enclosed in a measurable and controllable space at the same time. The building's floor area comprised of 70,000 square metres and combined different biomes complete with full-grown trees. Asendorf contextualises the *Crystal Palace* with panoramas, zoos, museums, and botanical gardens whose function as encasements is to gather the totality of Earth. He specifies that such architectures simulate cut-outs of the world ("Weltausschnitte") no matter how big the distance between each other is in actuality (Asendorf 2017, 437–38). In such a way, parts or regions of Earth were synthesised into a patchwork of coherent experience space.

In this context, Asendorf then thematises the role of the *Crystal Palace* by including philosopher Peter Sloterdijk's remarks on the geo-political implications of the said building. For his philosophical critique of globalisation, Sloterdijk borrows the term *inner world-space* ("Weltinnenraum") from Rainer Maria Rilke's 1914 poem *Es winkt zu Fühlung fast aus allen Dingen* (Sloterdijk 2005, 307–9; Rilke 1986, 878–79). In his phenomenological take on being one with the non-human, Rilke uses *inner world-space* to express the correlation of all entities and events in the universe, and thus discards the anthropocentric man-nature dualism (Fischer 2015, 205). On this base, Sloterdijk coins the term *world-shaped hall* ("weltförmige Halle"), arguing that the *Crystal Palace*'s dimensions are so encompassing and big that there is no need to exit it ever again (2005, 307–9). In this sense, Dominik Finkelde states that world expositions of the nineteenth century were dominated by a picturesque chic and sported the staging of faraway regions as copies or replicas in the form of walkable settings. To him, world expositions were a medium of appropriation by de-auratising faraway places and bringing them or their objects to the masses (Finkelde 2007, 168; see also Mitchell 1989). The *Crystal Palace* then is the architecture of an ideally industrialised realm embodying the spirit of globalised trade and imperial power. In the same way Sloterdijk decouples Rilke's term and intention of a phenomenological world experience in order to use it for a critique of globalisation, here, the *world-shaped hall* in turn will be adapted to describe the media-specific worldliness of open world games and their *skyboxes*. That said, the open world structures are digital architectures of gathering

verschwindet. Wir wissen nicht, ob das Gewebe hundert oder tausend Fuß über uns schwebt, ob die Decke flach oder durch eine Menge kleiner Dächer gebildet ist, denn es fehlt ganz der Schattenwurf, der sonst der Seele die Eindrücke des Sehnervs verstehen hilft" (Bucher 1851, 10).

and synthesising distant parts or biomes of the world and hence exceed the manageable level structures of linear 3D game worlds and their separately loaded *skyboxes*. Finally, the architectonics of open world games are no caves but *world-shaped halls*. Asendorf defines the *Crystal Palace* as an architectural prototype of the *inner world-space* concept:

An inner world-space is characterised by the partial rudiments that are synthesised. The emergence of such a space is preconditioned by a certain civilising stage of development (and willingness) which enables the transport of every single object or whole cohesive world cut-outs from their place of origin to any arbitrarily chosen place in order to exhibit as well as recombine them there. In extreme cases, the semblance of a complete system is evoked. This is especially the case with immersive representations: while involved in an elaborate staged space without any borders or perceptible exterior, the viewer might be unable to differentiate between the staged and the real. [...] The Crystal Palace [...] appears as an artificial universe [and] as an outcome of spatial inversion, it provides the possibility of consumption or realisation of up-to-now faraway objects at the own place (translated from German by the author, Asendorf 2017, 437).¹⁸

This is also the case with the coherent and openly navigable space continuums of open world games: game developers synthesise aspects or parts of Earth as fragmented assets in the computer game's database, and recombine single objects or whole biomes, cityscapes or iconic geological formations into a playable, traversable *active level structure* in form of a non-linear topography full of POIs and ludic affordances. In the sense of Gilles Deleuze and Félix Guattari, this governing of worldliness in game design can be defined as a hardened segmentation of the game world (1992, 286), which will later be categorised as *striated space*. Often, and especially in *rural open world games*, this hardened segmentation is disguised as smooth segmentation of primitive societies or natural landscapes (ibid.), which I defined as *striated wilderness* (Bonner 2018).

18 "Einen Weltinnenraum aber charakterisiert, dass hier die jeweils partialen Ansätze synthetisiert werden. Das Entstehen eines solchen Raums hat einen zivilisatorischen Entwicklungsstand (und Willen) zu Voraussetzung, der es erlaubt, jedes Objekt oder ganze in sich zusammenhängende Weltausschnitte vom ursprünglichen an jeden beliebigen anderen Ort zu verbringen, dort zu zeigen oder auch zu rekonponieren. Im Extremfall wird dabei der Anschein von etwas in sich Vollständigem erweckt. Das gilt besonders bei immersiven Präsentationsweisen; der in einem kunstvoll inszenierten Raum ohne Grenzen und sichtbares Außen eingetauchte Betrachter wird das Dargebotene kaum mehr von der Realität unterscheiden können. [...] Der Crystal Palace [...] erscheint als künstliches Universum [und] bietet als Resultat einer räumlichen Inversion die Möglichkeit der Konsumption bzw. Vergegenwärtigung des eben noch Entfernten am eigenen Ort" (Asendorf 2017, 437).

The game world of *Horizon Zero Dawn*, for example, is a widely ramified mountain valley with plateaus situated between the US federal states of Wyoming, Colorado, and Utah. In adapting characteristics of those well-known ecoregions and national parks like *Yellowstone* or *Bryce Canyon*, the topography is iconically charged. The open world game is an architecture of the said inverse effect as it gathers faraway places at the very own place of the player-character. The latter has to be understood in two ways: firstly, as the audiovisually staged point of action of the avatar in the navigable enclosed mountain valley, and secondly, as the physically real place of the player.¹⁹ Another media-specific characteristic can be clarified with the open world racing game *Forza Horizon 3* (Playground Games 2016). In its *skybox*, a small area of southeastern Australia, which covers a part of the actual federal state New South Wales, is staged complete with abruptly changing biomes, a complex network of streets and paths. Its elements are regions and topographies from distant areas of Australia Northern Territory's desert biome near Uluru or the iconic limestone cliffs and its rugged monoliths known as *12 Apostles* in *Port Campbell* National Park in Victoria. In-game, the latter are situated at the east coast right above *Cape Byron* State Conservation Area's peninsula instead of the southern coast. The tropical rainforest biome of *Daintree* National Park is moved from the northern tip of Queensland to southern inland high plateaus. Almost like the regions in theme parks or landscape gardens, this recombination into a new topology has the function to offer more variety and thus more 'fun' or entertainment for *free roaming* and goal-focused racing.

Finkelde and his remarks on world expositions can be contextualised here once again. He highlights that natural and artificial objects scattered around the globe are merged into new forms and are consequently governed. The centre as a place of recombination and gathering becomes the place of synopsis ("Zentrum als Ort der Zusammenschau," Finkelde 2007, 170; see also Mitchell 1989). The faraway places become steadily visitable and usable (*ibid.*). Accordingly, the *Crystal Palace* as well as the open world *skybox* and its interior topography perfect the illusion of worldliness. One is the analogue *world-shaped hall* of the British empire and its imperialism, the other is the *world-shaped hall* of digital media and postmodern entertainment. In reference to Walter Benjamin, Finkelde argues that the faraway, the exotic, and the unknown of world expositions (e.g. *Crystal Palace*) as well as their staged hazard and adventure become domesticised by the interiors of the citizens (*ibid.*, 177). Today, these interiors also include playing open world games and streaming numerous wildlife and nature documentaries. Furthermore, players have the advantage of enjoying the view of landscapes without any effort or actual hazard. According to Jost, this aspect was already highlighted by Gérard de Lairese in 1707 regarding themed and fully painted rooms

19 For more on the player-avatar relation in first- and third-person perspective games and under phenomenological aspects of Maurice Merleau-Ponty, see Klevjer 2012, 17–38.

in apartments (Jost 2015, 54). Such a room provides “armchair travels” or, as Benjamin writes, is a box within the “world theatre” (1983, 52). According to Benjamin, the citizen wants to be entertained in his illusions. The phantasmagoria of the interior denotes a universe to its inhabitants (ibid.). In case of the players, the audiovisual experience of the *world-shaped hall* generates a media-specific, ludic world theatre. The global environment is immediately enclosed and canalised via telecommunication. All of the aspects above are indispensable for the following study on the *open world chronotope*, Bakhtin’s concept, and the game developers’ ideological implications.

The Open World Chronotope— On Bakhtin’s Theory and Non-Linear Game Worlds

Within the concept of the *chronotope*, Mikhail Bakhtin established a spatiotemporal normative structure in order to analyse the experience of world within literary works and their genre characteristics (2014). In 1975, he defines the *chronotope* as the correlation of space-time relationships of specific genres such as the Greek novel or the chivalric novel, and emphasises that time is nested and space gains intensity (ibid., 7). Space is filled with logic and causality over time. As Bakhtin’s theory derives from literary studies, he focuses on spatiotemporal dimensions of a narrated world, its staging and events. His initial motivation is the idea that literary works need to acquire aspects of real space and real time in order to stage a world (ibid.). This is also true for any other fictional work such as film, paintings or computer games. For instance, Espen Aarseth emphasises that

games and stories seem to share a number of elements, namely a world, its agents, objects and events. [...] [Game worlds] are different from so-called fictional worlds in that they [...] have a measurable, concrete extension that can be explored directly by an independent agent. Fictional worlds depend on the imagination, whereas game worlds have objective existence, even if they only exist via computing machinery (Aarseth 2012, 2–3).

Art historian Wolfgang Kemp adapted the *chronotope* in order to analyse structures of paintings from early Renaissance onwards (1996). He coins media-specific forms like the *palace chronotope* or *crucifixion chronotope* and emphasises the distinction between the space of action as *trajectory* and the space of perception as *prospectivity* (ibid., 99). He exemplifies this with Rogier van der Weyden’s intricate *St. John Altarpiece* (1455), which is structured in multiple nested segments of spaces and interiors. *Trajectory* and

prospectivity seem to mesh in parallax scrolling games such as *Inside* (Playdead 2016) or *Planet Alpha* (Planet Alpha ApS 2018) that implicate their story and world through background scenery and *ancillae narrationis*, with the ‘plot’ only taking place in a two-dimensional space as a directional axis.

In order to depict events beyond framing architecture, landscapes and paths come into focus. Kemp speaks of *telescoping* time and space by using altitude differences, prospects and adjusting proportions of distant objects (1996, 162–64). *Prospectivity* and *telescoping* culminate in the horizon as key features of the experience of landscape. This can be seen in Andrea Mantegna’s paradigmatic gradation of the view from Golgotha to Jerusalem in *Predella San Zeno Altarpiece Verona, Crucifixion* (1457–1459). In the sense of Jay Appleton’s *prospect-refuge theory*, such a topography is defined as *prospect dominant landscape* (1975, 74, 146), which is also a crucial characteristic in open world games. He defines the horizon as a *secondary vantage-point*, which encourages speculations and curiosity concerning the landscape beyond (ibid., 90). According to Jeff Malpas, one accesses an environment and its points of interest through the horizon. Thus, the horizon is not only a line in the far distance but an active fluid boundary:

The sense of ‘within’ that belongs to landscape derives from the understanding of landscape as a mode of *place*, [...] as possessing an essential *interiority*. [...] Landscape opens up within its horizon, is oriented in relation to entry and departure into and from it, and is shaped by and through the journeys that are possible within it. [...] Only within a horizon can a journey be undertaken; only within bounds can there be a between; only within bounds can there be an infinity, can the unbounded open up (emphasis in the original, Malpas 2018, 3–6).

Elsewhere I defined this continuous navigation from horizon to horizon, from hill to mountain top to valley sides, from ledges to watchtowers as *prospect pacing* and described it to be essential for rhythmising coherent open world games formulaic distillations of actuality (see Bonner 2018).

Just to give an example, in *Horizon Zero Dawn* most watchtowers are, in contrast to *The Witcher 3: Wild Hunt* or the *Assassin’s Creed* games, not scalable but also function as navigational points of interest in the sense of Appleton’s *secondary vantage-point*. In addition, said towers mostly are placed at ledges, cliffsides or (mountain) ridges as *prospect reduplications* (1975, 121–23). Using lines of sight that are ‘moulded’ in the level structure’s geometry, the player-character may gaze at a faraway tower ‘by accident’ due to a void in the rock face of an unobvious snowcapped pass and her explorative navigation not far from the settlement Hunter’s Gathering in the Valleymeet mountain valley that combines boreal forest and alpine biomes (» *Fig. 4*). This sub-region



Fig. 4 Prospect pacing in *Horizon Zero Dawn* as a non-linear, optional way to introduce players to new regions of a game world.

functions as one of several possible transitional passages between the greater sections of the game world. The Nora Sacred Lands mark the starting regions in the eastern third of the open world, whereas the desert and the tropical rainforest biomes of the Carja Sundom are situated in the western two-thirds. The latter is mostly roamed in later stages of one's playthrough. At this point, one can follow the next quest or navigate the several points of interest in Valleymeet or follow the newly perceived landmark that also sports the yet unknown architectural language of Carja culture. Traversing the snowcapped pass and approaching the *secondary vantage-point* embodied by the tower leads the player-character to ever-changing panoramic vistas in Carja Sundom, its vast desert biome embodying the scenery of later quests. By reaching the watchtower and the ledge surrounding the eastern border of the desert biome, the game world also enables multiple prospects within the changing horizons of alpine ridges to steep arid cliffsides and monolithic rock formations. This specific and optional *prospect pacing* introduces the player-character to the expressive geological formations known from national parks of actual Utah and thus to the realm of Sun Carja. In this way, chaining up specific vantage points, landmarks, and lines of sight in the game world within changing biomes and topographies, the "*interiority*" of the landscape becomes an end in itself. The faraway point becomes the vicinity and as such *prospect pacing*, highlighting the properties of the open world as a *world-shaped hall* more evidently. It also, as will be discussed hereinafter, functions as an intermediary design tool between *smooth* and *striated* appropriations of game space.

The Open World Chronotope's Topology—Landscape Experience and Free Roaming as Ceaseless Time

With the aforementioned findings, I am already in the middle of the first of two aspects I will use to define the *open world chronotope*. In open world games, the experience of a vast landscape becomes an end in itself—already clarified as fetishism of space above (Nohr 2013, 7–8, 18). This brings us to a critical point: Bakhtin stresses that time is the critical agent of the literary *chronotope*. This way, space gains intensity and becomes roped into the story. Characteristics of time are unveiled in space, hence it is filled with causality and becomes dimensional (2014, 7–8). Gabriel Zoran highlights that the literary *chronotope* is constituted by "defined directions", fixed axes as stretches of way, fixed places of departure, and fixed successions of locations (1984, 318–19). This is not the case with freely explorable game spaces and their network of places like in the *rural*, *urban*, and *urban open world structures* outlined above. In fact, I would argue that in the context of the (mostly) non-linear coherent expanse of open world games,

space is the most critical agent. On the one hand, I base this thesis on Tim Ingold's concept of *region*, which he defines as places that exist "as nodes in a matrix of movement" (2011, 219). This is tightly interwoven with Malpas' theory of the interiority of landscape as well as with my concept of *prospect pacing*. Ingold talks of "wayfinding" as the appropriate spatial practice that unfolds "a field of relations established through the immersion of the actor-perceiver within a given environmental context" (ibid., 220). He concludes that "knowledge is regional: it is to be cultivated by moving along paths that lead around, towards or away from places, from or to places elsewhere. Conceived as the ensemble of [...] place-to-place movements" (ibid., 229). This fits with Deleuze's and Guattari's concept of *smooth space* as the topological space of affects, vectors, and appropriation (1992, 496, 663). Both authors understand the *smooth* appropriation of space as a process of close-up perception and the *smooth space* as a haptic one (ibid., 682). According to this, the play modes *free roaming* and exploration will then produce a *smooth space* within the hardened segmentation of *striated space* as the topographical space of long-range visibility, metrics, and fixed stretches of way (ibid., 496, 523, 524, 663, 664, 666, 682). Although the *striated space* is characterised as optical space, both, the *smooth* and *striated* are perceived in tactile ways as well as by gazing as dominant (visual) practice (ibid., 682). The *prospect pacing* of open world games as governing design principle has then to be understood as intermediary between the *smooth* and the *striated* mode of appropriating space.

On the other hand, I refer to Gordon Calleja who indirectly confirms my assumption by highlighting the importance of a game world's primary function to stage a sense of "inhabiting a place" instead of just providing the perception of a representation of it (2011, 43):

There is an important difference to be appreciated between ergodic, simulated landscapes and non-ergodic representation of landscapes. Although one can imagine roaming around the represented space described in a piece of literature, traversal is limited to mental imagery. To move from one point to another in a game world, players must literally navigate their way, not merely imagine it (ibid., 74).

Open areas enable multiple approaches and play modes towards quests. Key are the different modes of perceiving space, being in space or being space itself in the sense of Deleuze and Guattari (1992, 657–94; see Bonner 2015, 2018). That said, there is a need to establish the foundation of the *open world chronotope* as a world experience in the sense of the *world-shaped hall*. In the following, the focus will be on two core aspects of *open world chronotope*: (1) the topology (*smooth space*) in the sense of landscape experience, *free roaming*, *prospect pacing* and ceaseless time, and (2) the topography (*striated space*) embodied by quest structures, icon hierarchies, gameplay loops, and

episodic time as governed hardened segmentation.²⁰ Concerning the two categories, I am merging characteristics of the *chronotope* as well as the *smooth* and *striated space* with characteristics of the *texte fleuve*²¹ in order to achieve an adequate model for the open world game analysis. To my knowledge, only one piece of research to date has done an in-depth analysis of the politics of time within open world games and their paradoxical relationship between fragmented quests, their illusion of time-critical agency, and the seemingly endless *free roaming* and exploration: in her PhD thesis, Sophie Marie Bargues Rollins analyses open world games by contextualising *texte fleuve* and Marcel Proust's seven volumes of *À la recherche du temps perdu* (1913–1927):

There are two primary aspects of perpetual time: first, *ceaseless time* or *ceaselessness*, the endless temporality upon which the second aspect depends and within which it operates. This second aspect is *episodic time* or *the episodic* — the bounded, narrative time of beginnings and ends, of story, of action, of quest. [...] *Episodic time* in the *texte fleuve* exists entwined with the endless 'background' time of ceaselessness. Episodic time emerges from ceaseless time, is pulled from ceaseless time by the narrator and the reader in the reader's perception and organization of ceaselessness (emphasis in the original, Bargues Rollins 2015, 46, 48).

Aarseth already comments on the different play modes and the politics of time in 2005:

Finally, we have games with completely open landscapes; where the challenge of navigation is mainly a matter of moving safely, and not of maze-solving. A recent example is *Morrowind* (2002), where the game consists of one huge, continuous world/level (and some underground 'dungeons') and where the avatar may move in any direction, as long as the monsters in our path can be

20 Topology refers to the geometrical and positional relations between objects or points that may not be visible. This hierarchical or ideological structure is embodied by a visually staged topography. Although topology is the structure of all functionality and affordances, the players interact with it via the medialised topography as appropriated in the open world landscapes. For more information about the distinct characteristics of topography and topology in computer games, see Günzel 2016.

21 Sophie Marie Bargues Rollins clarifies the *texte fleuve* as a type of text that "most clearly attempts to overcome finitude" and "is not limited to a medium, a genre or a form" (2015, 2). Characteristics are "depictions or enactments of a world that is both fragmented and potentially limitless in spatial and/or temporal extension", "implementation of a potentially infinite recombination of the text's fragments", "infinite networks" and "a representation or encouragement of the desire (always frustrated) for total knowledge of the world" (ibid.). She compares the *texte fleuve*'s long or wide scope to today's open world games and their gameplay loops as well as to Proust's narrative looping (ibid., 8).

conquered. In *Morrowind*, we may eventually discover story-elements in the form of a ‘central quest’ that one is free to pursue, but given the open landscape, one can play for a very long time doing anything one pleases (emphasis in the original, Aarseth 2005, 505).

As non-linear the topology of open worlds and as varying the interlaced time units are, they form a linear gameplay succession due to the players’ oscillation between *free roaming* and completing a succession of quests. The ambiguity and choice-making mark the distinction of the computer game and the process of place-making. Bakhtin argues that certain literary subjects or genres such as the Greek novel indeed need vast spaces and multiple locations in order to stage exploration, escape, pursuit, and confrontation but function on interchangeable backgrounds. The adventure then can be translocated—what happens in Egypt might also happen in Byzantium—as the *genius loci* does not play a role for the events (2014, 23–27). Regarding annual iterations like the *Far Cry* and *Assassin’s Creed* series, this argument does not apply to open world games where the *genius loci* functions the other way around: place-making, the *interiority of landscape* in the sense of *world-shaped hall*, seems to be more important for digital game worlds than for literary worlds. This is also stated by Aarseth: with *Far Cry* (Crytek 2004) and *Faible* (Lionhead Studios 2004) as his examples, he wonders if an interesting landscape full of quests is sufficient for a computer game, even when one-dimensional characters and redundant conventional gameplay are incorporated (2005, 505).

Additionally, in his PhD thesis, Dan Pinchbeck of TheChineseRoom discusses the importance of environment in game worlds and its scale in order to stage an authentic ecologic coherence. According to him, open world games can be categorised as a mixture of “country” and “global” scale using a vast spatial continuum, fast travel, and vehicle travel as well as authentic bridging structures between different biomes or themed regions (2009, 117–20). He speaks of the environment as a “collection of objects in the set that function as a singular conceptual entity, containing a significant number of gameplay affordances or having a temporal span that constitutes a significant amount of overall gameplay” (ibid., 96f.). Several environments then constitute an “environment set” that is “accessible within a non-linear area” where multiple environment sets adjoin each other (ibid., 97). He basically describes the constitution of the *world-shaped hall* that is most evident in the theme park-like idea of staging contrary or distinct themed spaces or biomes as direct neighbours like the island of *The Witness* (Jonathan Blow/Thekla 2016) or in *Fortnite Chapter 2* (Epic Games/People Can Fly 2019). That said, varied biomes or environment sets can be used in order to disguise redundant quests.

There are also examples of far more cohesive environment sets. In *Far Cry 5*’s (Ubisoft Montreal/Toronto 2018) fictional mountain valley named Hope County of U.S.

federal state Montana, players roam a mixture of temperate alpine biome, boreal forest biome (Woodward 2009, 6, 8), and cultural landscapes resembling the Rocky Mountains area, which can be experienced in Montana, Wyoming or Colorado in actuality. This *rural open world structure* comprises of three environment sets that are mostly distinguishable by their use of verticality as well as flora and fauna: Holland River is mostly plain with industrial agriculture and redundant environments of farms and fields; Whitetail Mountains stage a fenced wilderness as a national park complete with numerous cabins and steep secluded mountain tops; Henbane River seems like a mixture of the previous two. Players can appropriate the regions clockwise by fulfilling the quests or navigate freely through the world and stumble upon objectives and events.

Only few open world games are brave enough to confront players with wilderness as an empty vastness free of quests, hostile NPCs, and other affordances. *Metal Gear Solid 5: The Phantom Pain* (2015), *No Man's Sky* (2016-) and *The Legend of Zelda: Breath of the Wild* (2017) partially stage the idea of remote ridges, billowy tundra, grasslands, and arid deserts.²² At the time of writing, *Red Dead Redemption 2* embodies the pinnacle of mainstream open world games that focus on intricate landscapes and thus stage topographies seemingly as *non-directional smooth space* (Deleuze and Guattari 1992, 663) mostly rid of quests, loot boxes and the like.²³ There are secluded mountain peaks like Mount Shaun and the adjacent picturesque valley of Little Creek River in the north of the West Elizabeth region; the billowy meadows of The Heartland in the New Hanover region or the eastern part of Ambarino, especially the evocative rock formations of Grizzlies East. The four western areas of the New Austin region are a reworked version of the diverse desert biome of the prior game. It represents a third of *Red Dead Redemption 2*'s game world and apart from two settlements, wildlife, a secluded bandit camp or few random encounters, it is devoid of quests. Only cacti, Joshua trees (near Gaptooth Ridge), sand hills, and diverse sandstone formations in different shades of yellow, ochre, red, and brown build the rough terrain. This Wild West region is a *world-shaped hall* in its purest form, mostly free of ludic, goal-oriented play modes. Another recent example for the experience of the desert biome (Woodward 2009, 17–19) and its different geological forms is *Assassin's Creed Origins*' world of ancient Egypt (» Fig. 5). Certain environment sets sport nothing but sand and rocks, cliffs and cascading mountains as well as emergent sandstorms that reduce visibility. While traversing such a region, avatar

22 On Nintendo's concept of *airness* as a design concept of *The Legend of Zelda: Breath of the Wild*, see Cornelia J. Schnaars' chapter in this book.

23 The desert or tundra biome is the perfect example for a *non-directional smooth space* where nomads roam between multiple places that are characterised by variability (e.g. moving sand dunes and vegetation). In contrast, the *directional smooth space* is performed and experienced by nomads of archipelagos like in the South Pacific. They roam within a fixated cluster of islands, navigating shallow and deep waters, annual winds and cyclical currents (see Deleuze and Guattari 1992, 663–65).



Fig. 5 The desert biome White Desert in *Assassin's Creed Origins* functions as a regenerative landscape experience and is a distillation of the physical White Desert in Egypt in actuality.

Bayek sees hallucinations of a speaking bush or his late son. Especially to the south of the world map, several desert biomes are chained together and only few feature predator lairs or bandit camps as conventional optional quest places. Reflecting on the son's death and the solitude of Bayek's path of vengeance, as he and his wife drift further apart with every fulfilled main quest, the desert biome is a perfect metaphor that evokes slower pacing to contemplate between the repetitive quests.

Bakhtin's understanding of the *idyllic chronotope* presents several aspects that apply to the *open world chronotope* as a spatially limited micro-world that is self-sufficient in the sense of the latin term *domum* (2014, 160). This is especially the case with open world games where the initial environment set, although potentially littered with hazard spaces and hostile NPCs, evokes an atmosphere of familiarity and intimation like Geralt's Kaer Morhen with its boreal forest biome resembling the Swiss Alps myth in *The Witcher 3: Wild Hunt*, Aloy's enclosed mountain valley The Embrace in *Horizon Zero Dawn* or even Bayek's picturesque hometown Siwa.

While Aarseth states the game world category "open landscapes" is all about secure navigation and survival, Ben Bunting highlights the entertainment of getting lost as intrinsic to the open world. Hazards, then, must be controllable and obey a system of rules in order to evoke a foreseeable end (2012, 66–69). In addition, Calleja states

the importance of making discoveries, plotting one's own route "through a geographical expanse" and being challenged by traversing the ambiguous landscape while not always having an "all-knowing perspective" (2011, 75). The vastness of the *open world chronotope* must remain manageable, which is gained by the "interactive guidance system" and the "spatial guidance system" (Rotzetter 2018, 175–77) embodied by the topography like the already mentioned *prospect pacing*. This all adds up to the topological and player-induced adventure time of the *world shaped hall* of open world games that is distal to that of time critical quest lines in that "not only the affective power of [the] aesthetic beauty, but also the performed practice of exploring [the] technical and topographical boundaries" is so appealing (Calleja 2011, 77). In this context, Bunting writes about "gameplay-as-spatial-practice" and about

encouraging the player to appreciate the aesthetic appeal of the landscape, to feel a sense of achievement in having climbed high mountains and discovered deep caverns, and to relate to the details of 'their' virtual land in much the same way that a backpacker might relate to the details of an oft-returned-to trail. [...] This spatial practice then enables the experience of wildness by merging with the game's survival mechanic (2012, 146).

Ceaseless time is also incorporated in the game world's depiction of the everyday. For example, *The Witcher 3: Wild Hunt* stages the urban life of a vendor or peon as well as the rural life of a farmer with much detail and also throughout nighttime. *Grand Theft Auto V* does this only in fragments and very cursory. Bakhtin discusses this phenomenon of a static everyday life that does not progress with examples of Greek adventure novels by writer Apoleius and Gustave Flaubert's *Madame Bovary* (Bakhtin 2014: 55, 185). With the latter, he emphasises the country town, where no new incidents take place, just reiterative occurrences. Especially the NPCs' looped monologues and courses of action fit this description and can be experienced in *rural* and *rurban open world structures* but also in *Dishonored 2*'s (Arkane Studios 2016) elaborate stagings of nested, multilevel representational villas and their societal implications in the sense of Kemp's *palace chronotope* (1996, 119–45). In addition, the role of abbreviated day and night cycles in the *skybox* of open world games is an indispensable one with regards to not only the worldliness and its ceaseless time but also to the distinct altering play styles the day and night phases may demand.²⁴ This effect is even more crucial with

24 This can mean basic things like different movement patterns and traversal behaviour due to alteration in visibility range or overall viewing conditions, as well as distinct strategies in appropriating space due to more enemies or different enemy types during nighttime. Especially *Tom Clancy's The Division 2* (Massive Entertainment 2018) and *Red Dead Redemption 2* manage to stage very dark nighttime. The latter also stages a particular darkness during rainstorms. In addition, most of the robots in *Horizon Zero Dawn* have pretty balanced visibility in relation

implementations of dynamic weather simulations, volumetric cloud generation, and dynamic solar altitudes as in recent *rural open world structures* like *Horizon Zero Dawn* and *Red Dead Redemption 2* (see Schneider 2018; Bauer 2019).²⁵

The Open World Chronotope's Topography— Quest Networks and Gameplay Loops as Episodic Time

Aarseth defines a quest as “a game with a concrete and attainable goal” (2005, 497). As such there are three main quest types: “place-oriented” like a stretch of way or escaping a labyrinth, “time-oriented” like defending an area for a specific time or solving time critical puzzles, and “objective-oriented” like gathering object X from NPC A. These types then are combined with each other (ibid., 498). Here, I argue that “Place & Objective” quests are most common in open world games. This is verified by Sarah Zimmerdahl Josefson's findings based on her analysis of 1,119 quests in three open world games (2018, 40). These may be optional loot boxes and collectable items hidden in the topography; side quests/quest places like appropriating several outposts or scaling radio towers in *Far Cry 3* or appropriating forts, bandit camps, quarries, tombs, and ruins as well as random encounters and synchronising with evenly scattered vantage points in *Assassin's Creed Origins*; main quests like absolving a heist in *Grand Theft Auto V* or solving *The Witcher 3: Wild Hunt's* interlaced Bloody Baron quest, which constitutes of quest lines fragmented into several locations of the game world. Furthermore, several types of quests, events, and affordances can be bundled and structured in characteristic core gameplay loops like the “investigation loop”²⁶, which was developed by Gregory Belacel and Patrice Désilets, among others, for the first *Assassin's Creed*

to their sizes, while during the night, their light sources shine out in the gloomier scenery. This is turned around with hostile NPCs in *Assassin's Creed Origins* or *Odyssey* (Ubisoft Montreal, Quebec 2018): while most enemies wear colourful shiny armaments that are highly visible during day time outside of settlements and cityscapes, the very same NPCs might only be visible in close range during nighttime, except when holding torches.

25 The role of ecological and ambience aspects of worldliness is still to be researched more profoundly in future research. On the topic of ambience and atmosphere and the characteristics of the so-called walking-simulators, see Zimmermann and Huberts 2019. In addition, on authenticity and atmosphere, see Felix Zimmermann's chapter in this book.

26 The original “investigation loop” consists of the following actions and quests: scaling and synchronising towers in order to reveal the fog of war from a district, followed by eavesdropping, pick-pocketing and interrogating NPCs to then obtain information on Altair's target before starting the assassination quest (Bonner 2019b). In *Far Cry 3*, the scaling and synchronising of a radio tower dissipates the fog of war and presents POIs and quest places in the vicinity via a fly-through sequence.

(Ubisoft Montreal 2007) in order to let players scale towers, provide a rewarding vista, and unveil quests and POIs in the vicinity of the tower. This play pattern was furthered in succeeding iterations of the series. Since then, the tower-area principle of the “investigation loop” became an open world topos of the so-called ‘Ubisoft formula’ and was adopted as a redundant gameplay mechanic in most other open world games in one way or another (Bonner 2019b).

Aarseth also highlights that quests distributed in an “open landscape” can be nested and concurrent (2005, 499): “The quest is the game designer’s main control of the players’ agenda, forcing them to perform certain actions that might otherwise not have been chosen, thus reducing the possibility space offered by the game rules and the landscape” (ibid., 503). Whether these main quests are “open, selectable, or plotted” is up to the designers’ dramaturgy (ibid.). According to Aarseth, game worlds such as *Star Wars: Knights of the Old Republic* (BioWare 2003) or *The Elder Scrolls IV: Oblivion* (Bethesda Game Studios 2006) can be categorised as “‘creamy middle’ quest games” as players can choose “between kernels” and the satellites are “flexible” (2012, 3). Josefsen expands the observation on open world quests: “Furthermore, open world games do not impose a time-constrained experience, rather the player can explore the whole world in the order and timeframe they prefer” (2018, 22). She illustrates its structure with her adaptation of the “diamond superstructure” by Smith et al., which they understand as a regulating design solution in order to “give the player a feeling of freedom while still imposing a strict story. [...] The single quest hub does not have to represent an actual single location in the game world, only a single game state where all quests are available to the player” (2011). Quests, then, are embedded in the hub space of open world topography and are waiting to be initiated and fulfilled by the players in episodic time while they can perform *free roaming* and exploration in the open world topology without any time limitation. Thus, quests, loot boxes, random encounters, collectable items, and their episodic character are embedded as a *striated* topographical network in the seemingly *smooth* topological features of the ceaseless time of the *open world chronotope*. Mostly, they are represented by icons, pictograms or question marks denoting specific types of quests or affordances on the world map and/or in the interface. For example, the zoomed-in view of an area in the region of Elis in the western part of *Assassin’s Creed Odyssey’s* world map shows numerous question marks covering all POIs without much room for player-induced discovery. In addition, stacks of rhombuses with exclamation marks embody the urgency of quests to be worked off (» Fig. 6). Besides seven types of icons and pictograms that regulate the hierarchies and actions of the main, side, and optional quests, *Assassin’s Creed Odyssey’s* topographical structure is constituted by 26 different types of quest places, multistorey quest architectures, as well as seven quest types anchored to a NPC (some of them constantly moving within a region), among others. That said, the several types of collectable items are mostly nested within one of the quest places, which also applies to some of NPC-driven quest types.



Fig. 6 A zoomed-in view of Assassin's Creed Odyssey's world map. Question marks leave no room for player-induced discovery, and stacks of exclamation marks embody the urgency of quests to be worked off.

Here, AR-like interfaces also denote the topographical level (*striated space*) of the *open world chronotope* and thus amplify the differential of power between *free roaming* and absolving myriads of quests.²⁷ In cases where the goal is to tie players to game worlds for a maximum amount of time, the “interactive guidance system” and “narrative guidance system” (Rotzetter 2018) end in a much too restricting ‘parental’ lead-by-the-hand. This can make for overstuffed game worlds and evoke an overpowering in the players, who then surrender in the prospect of too much to absolve and too little to explore and discover on one’s own terms and thus to experience worldliness.²⁸ For

27 Deleuze and Guattari define the striated space through its focus on topographical and thus metrical relations as it is focused on optical and long-sighted features of the landscape with the goal of overcoming them through the most effective fixed stretches of way (1992, 682–84). The long-range visibility in open world games is embodied by the design concept of prospect pacing, enabling multiple angles on POIs from numerous vantage points and staging worldliness by panoramic prospects. In addition, AR-like interfaces mostly have counters actualising the distance still to be traversed until the next marked waypoint while e.g. marking quest places, POIs, hostile NPCs, save points or gatherable plants within screen space at the same time.

28 *Tom Clancy's Ghost Recon Breakpoint* (Ubisoft Paris 2019) is a recent negative example of loot shooters as ‘games as a service.’ Although the non-linear fictional Pacific island Aurora is a creative mixture of the iconic Hawaiian biome and the Nordic ruggedness of Iceland, the



Fig. 7 A zoomed-out view of the Paris cityscape of *Assassin's Creed Unity* complete with most icons marking the differential of power.

example, while *Assassin's Creed Unity's* 3D world map of Paris overlaps its urban topography with multiple copies of up to 53 different icons and pictograms, players may explore the cityscape in a topological player-induced mode as spatial appropriation due to the optical and informational immoderation (« Fig. 7). The ideology of episodic and ceaseless time of *texte fleuve* mirrors the game designers' struggle for a balanced differential of power within the open world. In addition, it fits perfectly with the adventure time of the Greek and chevalric novel as defined by Bakhtin. According to him, the adventures, in our context events or quests, are connected in a possibly infinite succession that have no inherent limitation and thus are out of the time continuum. They are fragmented, episodic, and beyond a coherent space-time (Bakhtin 2014, 17).

developers' decision to combine every topographical involvement strategy of several other Ubisoft open world games generates a total differential of power towards the developers' quests and loot structures. The *world-shaped hall* here becomes an insignificant backdrop, gameplay loops and their distinct flows clash into an incoherent game experience. For a general critique on the Ubisoft formula and the dominance or focus on quests and the game design ideology, see e.g. Gamwell 2018.

Primary [...] are depictions or enactments of a world that is both fragmented and potentially limitless in spatial and/or temporal extension [...]; The *texte fleuve* presents us with a shattered (and shattering) world, a world in fragments, a world built of fragments and falling back into them again. There are multiple endlessnesses in it, not simply one, because the *texte fleuve* is concerned with showing the multiple in the singular, and the singular in the multiple; [...] It is a network of fragments at the same time that it is a continuous flow (emphasis in the original, Barges Rollins 2015, 2, 8, 45).

These remarks enable the contextualisation with Lev Manovich's description of computer games as databases that are controlled by successions of algorithms (2007, 42). "Modularity" and "variability" are key characteristics in game design, and repeating spatial patterns are effective in order to communicate with the players.

Conclusion

The *skybox*' spatial inversion of world and the contraction or distillation of an expanse as a *world-shaped hall* corresponds not only with Asendorf's concept but also with Hollein's call for a new ideal of medialised architecture that synthesises faraway places and contextualises them at one's own place (Hollein 1968, Asendorf 2017, 437). Calleja concludes that "[t]he desire to explore new lands has been an inherent part of human nature since the beginning of our species [...]. The places we yearn for most are those that are different from our everyday surroundings, especially as promoted and popularized by the media" (2011, 73). Open world games can then be understood as a digital continuation of *inner world-spaces* like world expositions, theme parks, landscape gardens, zoos, and panoramas.

Understanding the game intrinsic space of open world games as *world-shaped hall* helps to grasp its media-specific ontology as an illusionary space of secularly worldliness under multiple aspects. It encompasses not only the very architectonics of the *skybox* and the landscapes as well as their constructedness and sign systems but also points towards the geopolitical, capitalist, and imperialist implications of the open world topoi similar to Sloterdijk's critique of actuality still inscribed in most game worlds. Based on this, exploring the spatiotemporal dynamics between the player-character and the environment can be furthered with the *open world chronotope* under the aspects of play behaviour, game design, and thus ideology of game mechanics specific to open world games.

1. In order to form the concept of the *open world chronotope*, it is necessary to merge the *chronotope* theory with the *smooth* and *striated space* and the politics of time of the *texte fleuve* theory. That said, the biggest distinction from Bakhtin's literary *chronotope* in context of open world games is the shift from time to space as the crucial and dominant agent. The players' agency is the media-specific focus of the "open landscapes" and "possibility horizons". Although Bakhtin stresses the importance of the interdependency between literary *chronotope* and literary genres for the open world games, I would like to suggest in reference to the *world-shaped hall* that open world is not a genre but a mode of staging a media-specific spatiotemporal continuum, a worldliness only possible in open world games independent from "genre settings" (Rauscher 2012, 19) like fantasy, science-fiction, critical dystopia, post-apocalypse, Western, and the like.
2. It is the ceaseless time of *free roaming* as a landscape experience orchestrated by the players in the non-linear navigable open world topology and the episodic time of completing and selecting quest lines that are inscribed by the developers as open world topography. The *open world chronotope* then depends on the oscillation of play modes. Bargues Rollins understands both aspects as "narrative from *space*" and "narrative from *quest*" (emphasis in the original, 2015, 31). Consequently, we have come full circle, as according to Bakhtin, there are two different *chronotopes* within a literary *chronotope* that need to synchronise and form the fictional world: the one of the reader, here the players, and the one of the writer, here the game developer's (Frank and Mahlke 2014, 206). Accordingly, the experience of the *world-shaped hall* and its implications depend on the level or quality of synchronising.

All the above aspects here open paths for future research that offers a closer look at the ideological aspects that spatial representations occupy in open world game spaces. Conclusively, in experiencing the *world-shaped hall* and its ideological implications—the developers' topographical differential of power inscribed as *striated space* as well as the said geo-political critique on imperialism and capitalism in the sense of Sloterdijk—players of open world games can be defined as *nomads* in the sense of Deleuze and Guattari (1992, 481–586).²⁹ According to them, the *nomad* as a *war machine* (player-

29 The concept of the *nomad* as it is established as a stateless *war machine* by Deleuze and Guattari is a problematic one anchored in colonialist discourses through White perspectives onto respective indigenous cultures, originally justifying the expropriation of lands as well as through "anthropological borrowing" (Miller 1993: 19). Subsequently, it has come under criticism in recent postcolonial theory and indigenous studies (see Byrd 2011: 13–21; King 2019: 98ff.). In the further exploration of the *open world chronotope* and the concept of the player as a *nomad* in my forthcoming monograph on open world games, Deleuze's and Guattari's image of the nomad will be reflected critically within several discourses in order to adequately contextualise and adapt it for my research on the player's role in open world games and their ideological implications. I would like to thank Cameron Kunzelman for feedback and pointing me towards the recent criticism concerning Deleuze's and Guattari's idea of the *nomad*.

character and her agency) is independent from the *state apparatus* (the game developers' topographical network, hardened segmentation, and quest structures), but the latter implements the former via institutionalisation through its game mechanics and quest lines (ibid., 483, 486, 678). Players steadily oscillate between a *smooth* (*free roaming*, exploration, ceaseless time) and a *striated* (quest absolving, goal oriented, gameplay loops, episodic time) appropriation of the *open world chronotope*. It is the non-linear strolling for its own sake versus the iteration, repetition, and fixed axes as stretches of way (ibid., 511). The *nomad's* courses of action embody a “stationary form of process”, a “reterritorialization” while “deterritorialising” the quest places, POIs, and gameplay loops (ibid., 524–25). Therein lies the ideological potential of player-induced agency within the open world games although the staged freedom and vastness, the *smooth* play mode, is predetermined by the developers already (see Bonner 2018). That is why the *open world chronotope* has an emphasis on the spatial aspect—the landscape experience as an end in itself.

Figures

Fig. 1: Graphic by the author.

Fig. 2: Image by David Shaver 2016. <http://www.davidshaver.net/images/boomtown/o.jpg>.

Fig. 3. Still from documentary: VPRO Documentary. 2017. “Horizon Zero Dawn—The making of the game (2017).” YouTube video 47:09. April 16. Accessed October 25, 2019. <https://www.youtube.com/watch?v=AoeaGRcdwpo>.

Fig. 4. Screenshots by the author, Guerilla Games 2017.

Fig. 5: Screenshot by the author, Ubisoft 2017.

Fig. 6: Screenshot by the author, Ubisoft 2018.

Fig. 7: Screenshot by the author, Ubisoft 2014.

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Square, Marketplace, Tavern

Contested Spaces in Single-Player Neomedieval Role-Playing Game Cities

Krista Bonello Rutter Giappone, Daniel Vella

Abstract This chapter explores urban spaces in single-player fantasy role-playing games in terms of their nostalgically neomedieval representation, focusing upon the significance of three recurring landmarks—the square, the marketplace, and the tavern—as potentially contested sites. The games chosen for close analysis are *Baldur's Gate* (Bioware 1998), *The Elder Scrolls V: Skyrim* (Bethesda Game Studios 2011), and *The Witcher 3: Wild Hunt* (CD Projekt Red 2015). We identify three interrelated paths along which we can read the significance of these games' neomedieval urban spaces. The first is the nostalgic element—manifested, for example, in the evocation of a world structured on a binary rural-urban divide lost in the present-day urban metropolis. The second is their critical capacity to act as interrogations of contemporary power structures. The third point is that containment of these power structures within a neomedieval domain may result in a complacent comfort in our distance from the 'medieval' domains in question.

Keywords Neomedieval, fantasy, role-playing games, cities, nostalgia, law, history

Introduction

This chapter pursues the exploration of urban spaces in single-player fantasy role-playing games (RPGs) in terms of their nostalgically pseudo-historical representation, focusing upon the significance of three recurring landmarks: the square, the marketplace, and the tavern. The games chosen for close analysis in this paper are *Baldur's Gate* (Bioware 1998), *The Elder Scrolls V: Skyrim* (Bethesda 2011), and *The Witcher 3: Wild Hunt* (CD Projekt Red 2015). These games have been chosen for their typicality; to

a considerable extent, the observations we make are generalisable across a genre that works on familiarity with the tropes of its setting.

This exploration is founded upon recognition that these are games produced and consumed within a contemporary Western neoliberal context (Möring and Leino 2016). Within this context, these games' fantastical domains—not least their representation of urban spaces that recall the general atmosphere, if not the historical specifics, of the European Middle Ages—can be considered as works of “fantastic neomedievalism.” As Umberto Eco suggests, this evokes a postmodern nostalgia for an imagined past while offering critical potential resulting from the recognition that “all the problems of the Western world emerged in the Middle Ages” (1986, 64). Neomedievalism therefore suggests an imagined Middle Ages that is a composite of “medieval fragments (themselves also fabricated)” (Lukes 2014, 3), rather than a historically accurate representation, and—as will become apparent during our analysis—tends to draw in elements that are more typical of the early modern than of the medieval, reflecting what is already, historically, a blurred boundary.

Building on our observations regarding typical spatial organisations of the neomedieval RPG city (Vella and Bonello Rutter Giappone 2018), this chapter explores locations that characterise these cities in terms of the instability and political negotiability suggested by Eco's description of neomedievalism.

Nostalgia and the Fantasy RPG City

As a starting point, it is useful to ask: in the context of contemporary capitalist society, what purpose is fulfilled by the neomedieval imaginary? For J.R.R. Tolkien, the “escape of archaism”—of which we can consider neomedievalism a particularly prevalent example—is a nostalgia related to the rejection of an industrialised modern context with its rapidly changing technology: “the condemnation, implicit at least in the mere silence of ‘escapist’ literature, of progressive things like factories, or the machine-guns and bombs that appear to be their most natural and inevitable, dare we say ‘inexorable,’ products” (Tolkien 2006, 150). Of course, the ‘fairy story’ is as much the “product” of modern life as the “factories” and “machine-guns”—“it is part of the essential malady of such days” (ibid., 151). Implicit in the ‘fairy story’ according to Tolkien is not merely an escapism that renders the present more tolerable but also a critique of the status quo.

Needless to say, the conventional RPG fantasy setting is not an escape into a free-floating fantasy with no grounding in the contemporary moment. There is a certain typicality to the vision of life being presented in the various cities encountered in the titles discussed here, proceeding from assumptions about our own pre-industrial

past and our own lived experience of cities, inflected through the genericity of fantasy, re-structured in accordance with a fictional world. Yet, some nostalgic desire lingers, suggesting a possibility for some alignment between ‘past’ and ‘fantasy.’ We understand nostalgia, with Linda Hutcheon (2000, 195), as rarely invoking “the past as actually experienced [but rather] the past as imagined”.¹

We identify three interrelated paths along which we can read the significance of these games’ neomedieval urban spaces. The first is the longing, inherent in an imagined vision of the past, for a putative lost ideal—what Svetlana Boym terms “restorative nostalgia” (2001, xviii)—manifested, for example, in the evocation of a world structured on a binary rural-urban divide that is lost in the contemporary urban metropolis (Lefebvre 2003, 11), and resulting in the games’ rural spaces becoming sites for nostalgia of the pastoral variety (Martin 2011). The operation of this form of nostalgia can be identified in the—actual or assumed—desire on the part of the player to experience a sense of inhabiting the games’ fantastical domains, of ‘being there’ through a cognitive process of incorporation (Calleja 2011, 169).

The second is the critical capacity of these imagined neomedieval spaces to act as interrogations of power structures of legal, political, religious, and financial authority. Here, we draw upon Boym’s description of “reflective nostalgia”, which—unlike restorative nostalgia—does not seek an actual return: instead, it “thrives in [...] the longing itself” (2001, xviii). As such, it is inherently relational rather than absolute, linking the now to the then, the here to the there—‘then’ in this case as imagined (and longed-for) now, and ‘now’ as seen through the lens of then. For Boym, then, reflective nostalgia reveals that “longing and critical thinking are not opposed to one another”. One inhabits multiple places and times simultaneously, such that each context playfully reflects and comments upon the other(s) (*ibid.*, 50). In this way, the phenomenology of digital gameplay arguably renders the form an ideal vehicle for the experience of Boym’s reflective nostalgia. Thanks to the “double perspectival structure of ludic engagement” (Vella 2015, 55), the player, in the moment of playing, occupies a standpoint both within and outside the game world—just as nostalgia provides a “double exposure” (Boym 2001, xiv). The player is therefore always both incorporated in the game world and distanced from it. The experience of playing a video game foregrounds the relation between multiple time-places, and the critical potential inherent in the distance that structures this relation.

To qualify this critical potential, however, the third path to consider is that containment of these power structures within a neomedieval domain may result not in a critique of the contemporary moment but in complacent comfort in our distance

1 On the concepts of ‘authenticity’ and ‘accuracy’ in the context of a staged past in computer games, see Felix Zimmermann’s chapter in this book.

from, and assumed superiority to these domains—while allowing us to enjoy our visit as a ‘tourist’ in that world (Murray 1997, 106–12).

Square

Within the neomedieval cities we encounter, the square literally has a central function: it is the heart and focal point of the city. As such, it holds forth the promise of a communal space, the kind David Harvey observes a nostalgic hankering for:

The traditional centrality of the city has been destroyed. But there is an impulse towards and longing for its restoration which arises again and again to produce far-reaching political effects [...]. How else and where else can we come together to articulate our collective cries and demands? (Harvey 2012, xvii).

The square—where streets as paths of traversal converge—brings together the disparate voices, social classes, ethnicities, and interests making up the urban fabric: “the square fulfills the gathering function of the settlement. It represents the meaning of coming together” (Norberg-Schulz 1985, 61). As such, nostalgia for the square, on one level, represents nostalgia for a clearer organising principle, one to rally around or against, allowing for resistance.

Frequently, however, it is simultaneously the site where law and centralised authority asserts itself and spectacularly displays its power—squares are usually defined by “one or more dominant public buildings” that cement their status as centre (Norberg-Schulz 1985, 59–60).² In the neomedieval cityscape, they often feature a scaffold or other platform for public punishment in prominent position—suggesting a more brutal exercise of authority (» *Fig. 1*). It is telling that, as soon as the *The Witcher 3: Wild Hunt*’s main quest leads the player to the game’s biggest city, Novigrad, she is immediately guided towards Hierarch Square, its most important plaza. The city’s hegemonic dominant order is in full display: the player-character Geralt witnesses Witch Hunters conducting public burnings of magic users, representing religious and, due to their close association with King Radovid, political power. Power is inscribed not only in the surrounding architecture but also directly on the body of the condemned (see Foucault

2 What Derrida calls the “theologico-political” foundation of criminal law (2014, 4) has its counterpart in the city dynamics - the “despotic and [...] divine” aspects (Mumford 1961, 60), that Lewis Mumford sees as a balance of freedom and control, settling into a distribution of power between castle, temple, local community, and marketplace, as organising centres.



Fig. 1 Pyre for forbidden books on display, calling for a communal effort (“surrender unorthodox books!”) to reinforce established religious (and political) authority in Hierarch Square, in *The Witcher 3: Wild Hunt*.

1977, 3–31), in the power-instating “ceremony of the gallows” (Lawson 1988, 148). This function of the square can also be seen in figure 1, where “unorthodox books” are gathered and burned in Hierarch Square.

The square is also, however, the place where Geralt is introduced to the thieves of the shadow society presided over by the King of Beggars, representing underground spaces of resistance. This is hardly surprising: the foot of the scaffold—as Michel Foucault points out (1977, 53–62)—is also a site for the vocalisation and display of public dissent, even while it provides the stage for a display of official power.³

3 V.A.C. Gatrell, writing about the later history of punishment in England (eighteenth to nineteenth centuries—another period of transition, ostensibly towards ‘reform’) identifies this unsettled and irrepressible complexity of the crowd’s reactions as the main reason for removing executions from the public gaze/arena, and relocating them “behind prison walls” (1994, viii, 608–10). The physically real Place de Grève in Paris was both the site of highly spectacular executions, such as that of Damiens (with which Foucault opens *Discipline and Punish* (1977)) and a place of protest and demonstration (hence ‘grève’ becoming the French word for ‘strike’ as collective action). Execution spaces were typically sites where crowds congregated, as well as those who made their living off crowds—including, ironically, pickpockets and cutpurses (Cockburn 1977, 64).

Interestingly, executions may also function as notable border markers, a kind of initiation into the ‘laws’ of cities as the centres of civilisation.⁴ Just as Geralt is led to Hierarch Square to witness the burnings, *The Elder Scrolls V: Skyrim*’s opening sees the player-character being led to the block in the town of Helgen.⁵ Later, entering Solitude, the capital city of the game world’s Haafingar Hold region, will trigger the execution of a rebel. *Quest for Infamy* (Infamous Quests 2014)—an affectionate parody of *Quest for Glory* (Sierra On-Line 1989)—involves an invitation to witness an execution in Volksville Square as soon as one enters the city (» *Fig. 2*). Events will not progress until the player has gone to the appointed place. In such a manner, she is forced to participate in the “spectacle of the scaffold,” in Foucault’s words (1977, 32–72).

By levering one into the position of obligatory witness, as in figure 2, it seems to wring out a tacit recognition and acceptance or confirmation of the boundaries of the social order. Jacques Derrida points out: “The spectacle and the spectator are required. The state, the polis, the whole of politics, the co-citizenry [...] must attend and attest, it must testify publicly that death was dealt or inflicted, it must *see die* the condemned one” (2014, 2). Violence is authorised by those who bear witness; at the same time, the machinery of power asserts itself excessively and makes itself most visible—and as a result, most contestable. It is hard to overstate the significance of this interpellated act of witnessing—it both invites and circumscribes the possibility of dissent. The execution scene in Solitude in *The Elder Scrolls V: Skyrim* testifies to the presence of murmuring undercurrents of dissatisfaction and dissent—not simply in the person of the condemned but also in overheard NPC reactions to the punishment. Even the NPC Captain Aldis, the very representative of official authority, expresses regret. Since ‘cutscenes’ do not generally hijack the player’s agency in *The Elder Scrolls V: Skyrim*, the player can intervene to halt this execution, freeing the condemned man Roggvir. However, surrounding dialogue and events will proceed just as if it had gone ahead. Roggvir,

4 The walls and the square converge as sites of visible contestations of power—displays of summary ‘justice’ are located upon entry points to Novigrad, as well as in its main square. This finds its counterpart in history—in early modern Malta, for example, the mutilated bodies of the condemned would be displayed along the walls of the cities after execution (Zammit 2016, 107). Gates, bridges, and other boundary-markers were likewise places of display in England (see Laurence 1960, 35).

5 Indeed, it is an established trope for the player-character(s) in a computer RPG to start off as prisoners or facing punishment. Games that take this approach include: *Gothic* (Piranha Bytes 2001), *The Elder Scrolls IV: Oblivion* (Bethesda Game Studios 2006), *Two Worlds II* (Reality Pump 2010), *Dark Souls* (From Software 2011), *The Witcher 2: Assassins of Kings* (CD Projekt Red 2011), *The Elder Scrolls V: Skyrim*, *Legend of Grimrock* (Almost Human 2012), and *Dragon Age: Inquisition* (BioWare 2014). This generates a scenario where the player has to contend with an immediately hostile environment before reaching safety, picking up starting equipment and basic skills along the way. Thus, the player is also initiated into the rules of the game, paradoxically through the very process that sees her cast off the shackles of imprisonment.



Fig. 2 Interpellating witnesses, in *Quest for Infamy*.

moreover, is programmed to die, and will do so regardless, even dying for no apparent reason despite the guards and executioners having been dispatched. One could thus ‘divert’ the course of justice, but without real effect—just as skirmishes around the scaffold could provide a display of resistance to authority, but also be contained. It could be suggested that, as the game’s system does not sustain the consequences of this intervention, this highlights the rigidity of the game’s own power structures and the limits they place upon the player.⁶

In this and other situations, the player-character is generally positioned as not being in complete alignment with the law—at least, possessing some (implied) autonomy. In order to move around in the city, however, even the player-character must be subject to the law. For example, being observed stealing turns guards hostile in all three games. The suggestion that one may be subject to law, forced to accept its authority, but not identifying with it, is contemplated in both *The Witcher 3: Wild Hunt* and *The Elder Scrolls V: Skyrim*. In the latter, one could eventually choose to side with the rebels, overthrowing Imperial authority. In *Baldur’s Gate* too, one can join the Thieves’ Guild and evade the Flaming Fist on Thieves’ Guild Quests, as well as being ‘wanted’ for a

6 Mateusz Felczak discusses the two sources of law and the contest for a “monopoly on violence” in *Baldur’s Gate*, in Benjaminian terms; the game’s law thus checks a player-character’s law-making autonomy (2016).

brief part of the main quest (having too low a reputation will also result in one's party being 'wanted' by the law).

Despite the suggestion of the possibility of resistance inherent in the nostalgic communality of the square, then, the brutality on display suggests a time when "the logic of exemplary punishment" (Hindle 2002, 121) was a cornerstone of law enforcement. These instances deliver consolation for the irreconcilable difference that still separates us from the neomedieval vision.⁷ Where both Derrida and Foucault would seek to question this idea of 'progress,' these games might offer a compensatory prize—through a reminder of a seemingly more brutal time—for not living in the idyllic vision of a neomedieval world: a comfortable coming-to-terms with distance.

This suggests another strand of 'neomedievalism,' which invokes an abject and brutal 'Other' in contrast to which "contemporary Western hegemony" seems to emerge as justified, "always in the right" (Lukes 2014, 4). The games negotiate between the two neomedievalisms identified by Daniel Lukes that partially correspond to two contrasting neomedieval perceptions of the historical medieval as an "age of multiple renaissances and renewal" on the one hand, and as a "dark and chaotic past" on the other (Çetiner-Öktem 2009, 52).

Marketplace

The neomedieval marketplace is reminiscent of a Bakhtinian vision of democratising vibrancy, associated with the marketplace as a centre for collective participation and mingling in the social life of the city (1984). Indeed, the marketplace is often not clearly distinct from the square, though the location(s) may be differentiated in terms of function. Like the tavern, the marketplace tends to be a site for entertainment and performance. Waukeen's Promenade in *Baldur's Gate 2: Shadows of Amn* (BioWare 2000) includes a circus tent. In the DLC chapter *The Witcher 3: Wild Hunt—Blood and Wine* (CD Projekt Red 2016), once Geralt completes the Of Shears and a Witcher side quest, the quest-giving poet Le Papillon is to be found in Beauclair's marketplace, declaiming Geralt's feats to the crowd. Again, the outcome of the side quest A Portrait of the Witcher as an Old Man is the player-character's portrait being displayed to the throng in the marketplace.⁸ The "marketplace feast," Bakhtin

7 Gatrell writes ironically about such comfortable distancing: "Our times bear little relationship to those, it implies; progress in this as in other realms is achieved. [...] How could those people have done that to each other? How we have advanced since then!" (1994, 11).

8 In early modern London, the older urban space for communal life and participation co-existed for a while with a "prototypical culture industry," where traditional participatory social life faced a "significant challenge" from the emergence of the "cultural consumer"

suggests, “opposed the [...] unchanging established order and ideology, and stressed the element of change and renewal” (ibid., 81). This again testifies to a nostalgia for a time that is opposed to the univocal homogeneity of the late capitalist supermarket (Alexander et al. 1977, 247).

Yet, despite their celebrated room for diversity, marketplaces nonetheless display more reliable similarity than differences across these games—both visually and in the way they function. The player-character is likely to seek out and regularly return to the marketplace, to trade loot for new equipment. In a city marketplace, one might find a greater concentration of specialised merchants than in more provincial villages.

The marketplace offers a peculiarly capitalist challenge to stability. The marketplace, in these games, fulfils a double function. It is a nexus that connects the player-character within the system of currency and exchange that characterises commerce, and, as such, it invokes the exchanges of the capitalist market wherein the game itself is a product. We can recall Lukes’ description of the neomedieval as “that total world in which all is shockingly other yet also uncannily familiar” (2014, 5). The player already knows the rules governing such exchanges, and applies the same logic in both contexts. At the same time, one might also find ‘underground’ means to circumvent this capitalist system. The Thieves’ Guilds in *The Elder Scrolls V: Skyrim* and *Baldur’s Gate*, for example, offer an alternative network—an opting-out of the accepted rules of exchange, through their own network of fences, and pickpocketing or stealing.

Arguably, what we get in these games is a vision of the city on the cusp of development from feudal to capitalist—an approximately ‘early modern’ arrangement where political and economic power no longer fully coincide, and where trade, small businesses, and a budding market are emerging as competing centres of authority and economic power alongside the traditional institutions of a more monolithic structure (see Higgins 1997, 81). The latter find visual representation in the grandeur of certain buildings, seeming to betoken stability, while shops and market stalls proliferate around them—where the state emerges “not as a static totality [...] but as diverse and changing, the site of profound contradictions” (Sinfield 1985, 265).

Though the marketplace, and its carnivalesque potential for subversion, are frequently contained within a defined space—Waukeen’s Promenade in *Baldur’s Gate 2* is clearly walled about, and the market of the city Riften in *The Elder Scrolls V: Skyrim* is ringed by the surrounding architecture—in some games this demarcation is less clear. The market’s logic is sometimes seen to have infiltrated other domains. Trade is

(Bristol 1997, 244). *The Witcher 3: Wild Hunt* again recalls a time of transition and intersecting traditions—where performance occurs before a paying audience (sometimes vocal in response) in taverns, marketplace, but also in a dedicated space apart. Geralt, at various points, both sits in the audience and participates in the performance (e.g. in the main quest The Play’s the Thing).

a crucial determining factor in organising power relations in *Baldur's Gate*—not just within the main city (where the market is relatively dispersed in the form of scattered shops) but also in the network of relations between towns and cities in the world—in a main quest line that centres on the nefarious power-grabbing trade operations of the Iron Throne under Sarevok.

Historically, economic power was interwoven with other kinds of power, such as shows of military or legal force: “City walls obviously had a military function. [...] But the wall had other functions as well, for the system of fortifications had come into being largely to give city officials some control over the flow of goods and people in and out of their community” (Friedrichs 1995, 22). In England, a town’s right to hold a market was dependent on its having a pillory in the marketplace (Andrews 1896, 202).⁹ Friedrich Nietzsche foregrounds a close relation between penal law and commerce—suggesting that commercial law sets the model (2012; see also Derrida 2014, 153–54). We see a reflection of this idea in *Baldur's Gate*, where the Flaming Fist Headquarters—essentially a privatised police force, composed of mercenaries—is located in the same city quarter (South West) as the Merchants’ League Estate.

Tavern

The third urban site we discuss here—the tavern—is a space where the competing powers of hierarchised traditional authority and the market meet in joint conviviality or the occasional brawl. Indeed, while the square sometimes stages conflict between the different centres of power, these seem to ‘get on’ with less friction in the tavern. Power relations seem generally more negotiable—even horizontalised—in the tavern. In effect, taverns are pockets governed by an alternative order—where criminals and law-abiding citizens are equally received: “the alehouse offered a virtually institutionalized challenge to governmental ambitions for a well-ordered society” (Sharpe 1977, 102). For example, in *Baldur's Gate*, the Flaming Fist under NPC Officer Vai takes up home at the Jovial Juggler tavern in Beregost, paying bounties for bandit scalps. At the same time, a relaxation of the rules of social conduct extends, in the games in question, to the range of permissible behaviour the player can engage in. While fighting within the city bounds in *The Elder Scrolls V: Skyrim* will generally incur a reprimand from the city guards, brawling is permitted in some taverns. *Baldur's Gate 2* even goes as far as having ‘fighting pits.’

It is typically a place of respite and recovery, where the player retires when they are low on health—allowing a momentary pause in the progress of the quest. For example,

9 Executions in England tended to coincide with market-day (Gatrell 1994, 58).

resting in *Baldur's Gate* is one of the primary means of regaining lost health, while, in *The Elder Scrolls V: Skyrim*, resting at an inn confers the “Well Rested” status, providing an experience boost. Writing about that most famous of dramatic examples of the tavern in William Shakespeare’s *Henry IV, Parts 1 and 2*, plays otherwise filled with war and violence, Marjorie Garber notes the tavern’s association with “timelessness”, “pleasure” and “disorder”—implying a sense of inconsequentiality, and contrasting with history’s relentless drive in terms of “consciousness of time” (2004, 325). The tavern is a space where the pace might be different—it is also a space where one can often recruit new companions, listen to bards, play mini-games (like *Gwent* in *The Witcher 3: Wild Hunt*), receive gossip, pick up quests, and engage in brawling challenges. This suggests a free space of play that accommodates fluidity: “There was also a ludic element within early modern popular culture, expressed in various forms of transgression, social inversion, and excess” (Bristol 1997, 234). However, just as in the marketplace, this freedom is also enabled and supported by a commercial system of transaction—gossip, for example, is not freely volunteered by the innkeepers and publicans in *Baldur's Gate* but exchanged in a bartering system—where one can buy more expensive drinks to increase the chance of information that opens onto a side quest.

The tavern is often more localised and closely linked to district, which makes it seem a neighbourhood haven, binding a community, as well as welcoming travellers passing through—the kind of place capable of evoking a warmly nostalgic sense of belonging. However, this localised aspect also underscores social distinctions, such as socio-economic ones. In Novigrad in *The Witcher 3: Wild Hunt*, for example, the contrast between the upper-class western district of Gildorf and the slum in the eastern part of the city known as The Bits, which Gildorf literally overshadows, is embodied in the contrast between the ostentatious luxury of the Passiflora tavern and brothel and the rundown, shady Nowhere Inn.¹⁰ In the same way, the unsavoury Copper Coronet in Athkatla’s Docks district is sharply distinct from Waukeen Promenade’s Mithrest Inn in *Baldur's Gate 2*. These examples also suggest that the flattening of the social order we considered earlier as characteristic of the tavern has its limits.

10 In *The Witcher 3: Wild Hunt*, the variety and distinctive character of different taverns has even led to one tongue-in-cheek travelogue-style list of recommendations (MacLeod 2018).

Conclusion

The three locations we have considered—the square, the marketplace and the tavern—are typical of the fantasy RPG city. Although we have not focused upon it here, the design of *Dragon Age: Inquisition*'s capital city of the Orlesian Empire, Val Royeaux, demonstrates this typicality in a distilled way (» *Fig. 3*). It is pared down to the elements selected as essential—the marketplace-square is central, and symbols of official authority are integrated into it; its political and commercial importance in the world



Fig. 3 Val Royeaux marketplace-square, in *Dragon Age: Inquisition*.

are marked by, for example, plaques on monuments targeting tourists and visitors—diegetically suggesting its status as a place of exchange and cultural tourism, and serving to fill in lore for the player. The gallows stands in the marketplace-square, and is the central feature in a later companion quest, where the player-character's jurisdiction (literally acting as judge in the Inquisition) overtly competes with the official jurisdiction. The marketplace extends its tendrils to dominate other areas of the city. The cafés/tavern are visually foregrounded.¹¹

11 The player's ability to explore Val Royeaux in this game is, however, mostly limited to the more affluent areas.

The three locations represent different, competing configurations of the power relations determining the social sphere of the neomedieval imagination. By tracing these power relations, we can identify competing arrangements of the centralised, feudal power structures of the Middle Ages on the one hand, and the emerging forces of capital and the market on the other.

The player-character is very much a participant within these power relations—positioned as a witness to the executions in Hierarch Square in *The Witcher 3: Wild Hunt*, engaging in market transactions, competing in the tavern brawls in *The Elder Scrolls V: Skyrim*, and so on. At the same time, though these spaces might represent a nostalgia for communal spaces and life, the player-character is almost inevitably an outsider (Vella and Bonello Rutter Giappone 2018). This reflects the player's own position as a visitor—participating in the game world but not belonging to it. It is this double existence which aligns with the inherent duality Boym identifies in reflective nostalgia: the player is incorporated as a participant in the games' neomedieval domains, but is also able to reflect upon them from the outside.

The spaces considered here, precisely because they are so contested and therefore already predisposed to accommodating heterogeneity within a collective meeting place, are also where the player-character as a 'stranger' may appear to be most at home—the hospitality of the tavern, the cultural and commodity exchange of the marketplace, and gatherings in the square. The 'tourist' player thereby shares in the nostalgically longed-for participatory dimension of city-living.

This also points to a paradox that frames the inter-contextual relation: this nostalgic imaginary, cast as an antidote (offering both escapism and the possibility of critique or dissent) to modernity (and we could add, post-modernity) by Tolkien, is itself mediated and enabled by advances in technology, and, of course, by the system of capital, industrial production, and labour practices that is intertwined with, and makes possible, the technologies and production practices of commercial game development. The nostalgic distance generated may work to make us good consumers of a commodified dream of the past (a dream that re-stages the 'historical' transition into the social and economic conditions of capitalism), and (often at the same time) provoke us to critique the present by reflecting on what appears to have been lost—ironically, through the consumption of the products, and the participation in the cultural and technological practices of, the contemporary neoliberal moment within which we are situated.

Figures

Fig. 1: Screenshot by the authors (CD Projekt Red 2015).

Fig. 2: Screenshot by the authors (Phoenix Online Publishing 2014).

Fig. 3: Screenshot by the authors (Electronic Arts 2014).

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Taking a *Breath of the Wild*

The Concept of *Airness* in Nintendo's take on Open World Games

Cornelia J. Schnaars

Abstract With *The Legend of Zelda: Breath of the Wild* (Nintendo 2017), Japanese game company Nintendo has released a game that combines a vast game world with empowering mechanics. Under the notion of *airness*, this paper distils Nintendo's approach into central aspects that comprehensively span the domains of narrative, space, and mechanics. Due to subtle forms of player guidance regarding both landscape and quest design, players must actively gaze, examine, and move in order to explore the game space. The environment is full of puzzles and hazards that render understanding the complex systems of interaction with the game world's elements vital. In reference to theories of game space and game design, it will therefore be discussed that—based on a minimal narrative framework—manifold possibilities of navigating and manipulating the game world are effectively used to encourage player agency.

Keywords The Legend of Zelda, *airness*, game space, open world, prospect pacing, landscape as playground, space as canvas

Introduction

The long-awaited instalment in *The Legend of Zelda* series titled *Breath of the Wild* (Nintendo 2017) manages to informatively address some issues regarding the design of an open world game.¹ The development team calls the design principle behind it “open-air”, striving to create a world in which hardly anything is off-limits to the player (Anonymous, Nintendo 2017). This paper's thesis is that the term *airness* essentially describes the emphasis on exploration rather than player guidance that can be

1 Henceforth, *The Legend of Zelda: Breath of the Wild* will be abbreviated to '*BotW*'.

subsumed as extensive unrestrictedness—or rather appropriate balance between freedom and constraint.

It is suggested here that—based on the narrative framework being widely negligible and optionally accessible—the concept of *airness* essentially consists of three characteristics that encourage player agency: (1) The quest system is not restrictive on the player. Hence, waypoints do not form a chronological and spatial order but offer optional content for exploration. In addition, many quests require engagement with the game world, its landscape and the topographical map in order to find locations; (2) the world design and the types of movement available encourage exploration as well: the climbing and paragliding mechanics are essential for exploring the world in particular; and (3) the complex ‘physics and chemistry systems’, including the avatar’s rune abilities,² that manage interaction between objects (corresponding to supposed laws of physics and the four elements of nature) encourage players to creatively use and manipulate the environment. The game thus opens seemingly infinite possibilities for players to approach different situations.

Based on these key points, concepts from disciplines such as game studies, game design, sociology, and human geography are considered to argue that *BotW*’s *airness* appears to function as a counter-matrix to open world game design so far. The latter has long followed design guidelines that have become infamous under the umbrella term of the ‘Ubisoft formula’, as the game studio was one of the major developers to employ a core game loop of liberating and unlocking distinct regions and an abundance of fixed icons both within the vast game world and on the unfolding map (Sterling 2018, TC 00:03:12–00:03:34).³ However, recently published open world games increasingly reject this formulaic nature, good examples being *Red Dead Redemption 2* (Rockstar Studios 2018) and *Horizon Zero Dawn* (Guerrilla Games 2017). These less “ubified” (*ibid.*) games provide a foil to *BotW*, in order to illustrate in what Nintendo’s *airness* actually differs.

- 2 The ancient rune abilities are *Magnesis* (move metallic objects), *Stasis* (freeze objects in time and store kinetic energy), *Cryonis* (rise ice blocks out of water), and spherical/square bombs (explode).
- 3 Since these similar open world structures even spread to other game franchises, Sterling coins the term of “ubification” (2018).

The Concept of *Airness*

The concept of *airness* is based on an essential design decision, namely that the narrative fades into the background. The story in *BotW* unfolds alongside the actual game action in cutscenes that are only triggered if the player goes through the trouble of finding the location of Zelda's souvenir photos. Generally, players are not forced to repeatedly watch cutscenes in the course of the game,⁴ and will only be led into more linear paths if they decide to conquer the titans in the respective areas, as it requires a certain amount of communication and interaction with the local races. However, since these storylines are optional for the completion of the game, the overall obligatorily staged narrative is limited to the heroic tale of a boy who frees the princess from evil.

While the strength of a narrative-focused game like *Red Dead Redemption 2* lies in a convincingly portrayed protagonist and the player being able to empathise with him, Link deliberately remains an almost empty shell into which the player can project their own character. As a rather blank prosthetic proxy, he facilitates a subjective, embodied tele-presence inside the game world (Klevjer 2012, 28), and thus motivates an explorative approach to one's individual appropriation of game space.

Based on the narrative backdrop as an optional scaffold, there are three central elements to *BotW*'s concept of *airness*, which will be discussed in the following subsections. Two of them revolve around the systematisation and appropriation of game space: the non-restrictive quest design with the map functionality that reinforces a player's autonomy, and the game world's landscape design combined with the avatar's available movement mechanics that facilitate an explorative traversal of space. These two aspects are interdependent and thus difficult to clearly delineate from each other. For the sake of clarity, they will be addressed separately. The last essential aspect of *airness* deals with the interlocking systems of using and manipulating the game world that realise a huge possibility space of interactions and styles of play that can be performed in the game.

4 After leaving the tutorial area, the only skippable cutscene is the staging of the blood moon, a mechanic used to respawn killed enemies after a certain amount of time.

Air to Breathe: Systematization of Game Space

The first aspect of *airness* in *BotW* concerns the structure of the quest design, which imposes few limitations on the player. In combination with the map functionality that allows players to creatively explore quests based on topography, quests can guide players, but still allow an active approach of wayfinding. If a game offers a rich narrative, player navigation will be more restricted, as plot points need to be anchored in spatial structures (Aarseth 2005, 505).⁵ Due to *BotW*'s insignificant narrative, player agency during quests does not need to be too limiting. In many open world games, after accepting a mission, certain functionalities are hidden and only actions that are necessary for the respective mission are allowed.⁶ Similarly, natural obstacles such as steep mountains, cliffs or deep snow often limit paths in directions the player is not supposed to take. This "spatial guidance system' can guide players by limiting their freedom of movement" (Rotzetter 2018, 177). It might be annoying for players though to discover an interesting object (be it a building, an animal or a landscape formation) not that far away, which they would like to take a closer look at, but they are not allowed to leave the mission radius or the mission is considered to have failed.⁷ In *Assassin's Creed Odyssey* (Ubisoft Montreal, Quebec 2018), the player cannot quit certain main quests once they have been initiated. *Marvel's Spider-Man* (Insomniac Games 2018) frames some missions even more as isolated entities in that they are generally triggered when the avatar gets inside a pre-determined radius and certain areas cannot be (re-)entered outside of missions, whereas in *BotW*, the player is never caught inside a 'quest bubble'. This enables the simultaneous pursuit of different (side) quests.⁸ In addition, pre-defined quest markers on the map often only locate the character who is associated with the quest, not the location where it must be completed. The latter is often a puzzle in itself and requires thorough investigation of landscape structures in

- 5 *Red Dead Redemption 2*, for instance, seems to need a rather strict channelling of the narrative content since the game intrinsic world and the map accordingly change over the course of the story.
- 6 During a specific mission in *Red Dead Redemption 2*, for example, the player-character can only saddle and climb his horse and cannot brush or feed it anymore. Likewise, saving the game manually is not allowed during missions. The only comparable limitation in *BotW* is the interaction within shrines, where climbing on walls and other constructions is generally not possible. Otherwise the puzzle design would have been considerably more difficult.
- 7 Unlike *BotW*, *Red Dead Redemption 2* offers only one kind of symbol to place on the map, which complicates identification of different locations later.
- 8 For example, one shrine quest in *BotW* requires being at a certain spot at a certain time, which is when the blood moon rises respectively. Since the occurrence of the blood moon is not precisely known, the player is well-advised to keep doing other things until first signs of the blood moon can be spotted (red and black particles in the air and a certain sound effect) and only then travel to the location—which should have been marked on the map before—as fast as possible.



Fig. 1 Each tower poses challenges in form of enemies or environmental hazards. The Ridgeland Tower is guarded by several electrically charged enemies and additionally surrounded by water that drains Link's stamina.

order to discover the desired location. Taken together, the first aspect of *BotW*'s *airness* dissolves the linearity with regard to mission sequences that is still strongly present in other open worlds.

Along with that, climbing towers to uncover an area of the map with all kinds of symbols for side missions and collectibles has long been the most emblematic part of the 'Ubisoft formula'.⁹ In *BotW*, towers function as recurring landmarks in the vast hillscape, which must still be scaled, yet with two differences: first, each tower poses some kind of environmental puzzle (either through height, chasms, thorns, deadly mud or enemies), so they can never be scaled easily (» *Fig. 1*).

Second, the respective region on the map is unlocked only topographically and the absence of icons is crucial here. In its plainness and with a box of symbolic stamps at hand, the map persuades players to conceptualise their own system to trace promising topography and mark the corresponding places themselves (» *Fig. 2*).

9 In *Far Cry 5*, Ubisoft breaks away from the tower feature and self-reflectively alludes to its repetitiveness: when the protagonist has to climb a radio tower, a non-player character informs both the protagonist and the player that they do not have to climb any more towers.



Fig. 2 The player can choose between nine different stamp symbols as well as five beacons, the latter are visible through the telescope inside the game world.

According to Marc Bonner, using waypoints to mark destinations on a map “enables a goal-oriented, ludic, crossing of the vast landscape” (2018, 8). Bonner applies Gilles Deleuze’s and Félix Guattari’s differentiation between *smooth space* and *striated space* to video games by declaring that the use of diegetic or non-diegetic interfaces and maps comes with an increased concentration towards goals and progress (ibid.). Hence, the space is being perceived as *striated*. However, with a focus on the path in between waypoints and without using tools that systemise it, the perception of and the movement through space becomes *smooth* (ibid., 9). Although the use of the map with its variable markers and beacons is central to *BotW*, the traversal of the game space as *smooth space* is just as strongly encouraged. The exact locations of shrines and other quests often pose to be puzzles themselves and must be deduced on the basis of a close inspection of the environment. This results in a constant engagement with the immediate landscape which seems closer to “a practice of wildness” (ibid.).¹⁰ The focus lies on the percep-

¹⁰ This can be said at least for a playstyle using *BotW*’s so-called pro HUD-mode that hides all non-diegetic interface elements (except for the health bar in form of heart icons).

tion of the immediate surroundings and appropriation of game space with Link's own hands and the player's acuteness of mind.¹¹

In this regard, Adam Chapman differentiates between games that design space as “*narrative gardens*” or as “*canvas structure*” (2016, 101–5). He classifies open world games like *Assassin's Creed* (Ubisoft Montreal 2007) and *Red Dead Redemption* (Rockstar San Diego 2010) as *narrative gardens*, in which players are granted spatial freedom to explore the narrative they are presented with (2016, 103). Yet, they also channel the player's path by posing narrative or mechanical constraints, such as the emergence of missions at a certain point in time or the dependency on the player's progress concerning certain items and experience points.

BotW primarily uses environmental threats (high mountain ridges, broad rivers), weather, climate influences (desert, snowscapes, and ice water) and other hostile environments (Hyrule castle) to ward off unexperienced players. It almost never communicates to the players that they cannot go somewhere if they wish to do so. In this respect, Francine Rotzetter observes that *BotW* utilises a so-called *interactive guidance system* which

uses the players' curiosity and their motivation to guide them. Because of this, the players don't recognize the designers' leading strategies and are under the illusion of deciding in their own way. [...] The 'interactive guidance system' doesn't limit the players' mobility. It operates with elements such as motivation-based decisions (menace/ temptation, ways and signposts) [sic!] (2018, 175).

Considering such disguised player guidance, the traversing of the game space as *smooth space* may be exposed as an illusion to some degree. Chapman compares games that utilise a *space as canvas structure* to “patches of unkempt grassland containing the basic resources for a garden, but awaiting a gardener (the player) to formalize and decide its exact spatial narrative expression with the various tools that are provided” (2016, 104). Although this structure usually applies best to city-building games, this concept fits

11 Evidently, in the case of *BotW*, progress is not achieved in terms of player-character development or level-ups but in terms of the player's knowledge about the game's systems and abilities. As Farca, Lehner, and Navarro-Remesal point out, menacing nature and climate in *BotW* can even induce an experience of the sublime (2018, 2). The Gerudo desert is an especially hostile environment, where temperatures are extreme and sandstorms even disable the map, so that the player—being used to relying on the map—may experience disorientation and stress. “The vastness of the gamespace and its mazes, the Otherness of characters and monsters, and the opacity of the game mechanics—limited visibility, the lack of a map, the constant danger from heat or cold, which means players are never at ease to explore—make the Gerudo Desert almost a textbook example of how games can evoke the affective and aesthetic response of the sublime” (ibid., 18). Thus, the limitation of knowledge caused by the malfunctioning map becomes a mechanism of temporarily taking back the players' progress by reminding them not to rely on the use of interface elements that systemize the game world.

BotW as well because there is not much of a main narrative to be experienced. Rather, the player creates a narrative framework out of the found elements in an arbitrary order, which may drive the progress of the game. Regarding exploration, *BotW* is based on the principle of suggestion and not on the completion of a task list. In this sense, the map, and by extension the entire game space, can also be analysed as a *canvas structure* for the players to fill with their own mode of play and produce a narrative out of provided quests and their own experiences.

Space to Explore: Appropriation of Game Space

Assuming that navigation through game space hinges on the concrete landscape design as well as the afforded means of movement, it is argued that as the second characteristic of *airness* in *BotW* both aspects are intertwined in order to realise as much free exploration as possible. This includes the possibility to reach every visible location, which renders climbing one of the most important mechanics of the gameplay. Being able to scale literally any vertical surface combined with paragliding and swimming as long as Link's stamina lasts, the player is presented with seemingly infinite choices regarding pathfinding, compared to other open world games like *Red Dead Redemption 2*, *Horizon Zero Dawn*, or *Assassin's Creed Odyssey*, in which avatar movement is more strictly inscribed in the landscape's geometry. In terms of Aarseth's distinction of quests in game worlds, *BotW* appears to be the first to structurally display an actual "open landscape" (2005, 499), in which players may roam relatively freely and navigation is less confined by quest hubs than by environmental hazards. Hence, regarding landscape experience, games like *Red Dead Redemption 2* rather oscillate between *architectural probabilism* as some routes are more likely to be taken by players than others and *architectural determinism*, when there is very little navigational choice (Bonner 2019, 219–21). *BotW* might come closest to the other end of the spectrum in "master[ing] *architectural possibilism*" (ibid., 232).

Based on the manifold types of avatar movement, the world design of *BotW* had to follow certain design principles, one of which is the *triangle rule*: landscape features such as rock formations, mountains, hills, but also non-natural objects and landmarks such as the castle of Hyrule were designed roughly shaped like a triangle, rectangle or trapezoid in variable sizes (Wuollett 2017; Kohler 2017) (» Fig. 3).

This ensures that the players' vision is constantly obstructed, and they must always decide whether to circumvent an obstacle or climb across it. Either way, usually there is a hidden treasure or a rewarding vista to be discovered as a form of an extrinsic reward. In the sense of *airness* and *architectural possibilism*, the player must make active decisions while traversing the landscape, which is accompanied by an increased feeling of freedom and autonomy.



Fig. 3 The landscape is created under consideration of the *triangle rule*, thereby constantly motivating the player to move further (shapes drawn by the author for the purpose of illustration).

In contrast to this activeness, player passivity can be regarded as the epitome of a more touristic method of reception in many open world games. By indicating destinations on the map, the search for places in the game world becomes a passive journey between two points. This mode of pseudo-exploration in form of passing by various places of interest can accordingly be linked to John Urry's concept of the *tourist gaze*. At its core, it describes a gaze at land- and cityscapes that differs from the one in everyday life (1990, 2–3). Even though gazing in itself can be regarded as a fairly individual activity, within the frame of tourism, masses of people are strongly guided by gazing regimes of the western tourism industry and mass media.¹² The passivity of the *tourist gaze* can be observed in various open world games, causing the experience of the actual game world to often fade into the background.¹³ This complements the statement of Nintendo's development team at the Game Developers Conference

12 Culturally, the gazing regimes go back even further when people were first introduced to panoramic vistas within artificially created landscape gardens (see Cosgrove 2003).

13 For instance, the tourist mode in *Assassin's Creed Syndicate* (Ubisoft Montreal, Quebec 2015) is rendered blatantly obvious as players are encouraged to indulge in the practice of passive sightseeing, reminiscent of late nineteenth century phantom rides with a camera installed at the front of a train.

2017, where game director Hidemaro Fujibayashi explained that he wanted to move away from passivity towards an active gameplay experience in which the player has the possibility to follow their own path (Fujibayashi, Takizawa, and Dohta 2017, TC 00:12:25–00:15:08). With *BotW*, the journey is the reward in itself, and active pathfinding becomes the main task. The players' activeness is thus a central part of Nintendo's concept of *airness*.

BotW's world design considerably rhythmises the players' movement into a gameplay loop of gazing and moving: huge mountains or small hills in front of the avatar block the view, but usually leave several points of interest, such as shrines or towers, visible in the distance. The player can choose to scale a mountain in order to obtain a better overview. On the mountaintop, a rewarding vista usually awaits, often together with a Korok seed puzzle.¹⁴ In the context of Jay Appleton's *prospect-refuge theory*, such *primary vantage-points* open the field of vision to other potential *secondary vantage-points*, which promise different or even better prospects (1975, 89).¹⁵ The paraglider can be used to glide towards one of them, spotting even more landscape features on the way. Each location will again surround the player by landscape formations that block their view and will render the search for the next *vantage-point* necessary.

Gazing is thus subtly guided but not as passive as the *tourist gaze*. This play pattern of gazing and exploring can rather be described with what Bonner terms *prospect pacing*: "The continuous navigation from horizon to horizon, from hill to mountain top to valley sides, from ledges to watchtowers is not only essential for the experience of landscape (gardens) and wilderness, but also for rhythmising coherent open world games, which can be defined as *prospect pacing*" (2018, 5). Crucially, a mechanism of constant distraction is at play here as players become side-tracked on their journey quite automatically by the overall structuring of the game world (» *Fig. 4*).

14 Korok seeds are collectibles which can be used to unlock more inventory slots. Koroks are to be found all over Hyrule, each of them falls into one of several puzzle categories like pattern recognition. For instance, there are three apple trees and one of them has more apples than the others. The player needs to remove the additional apples to match the pattern of the other trees.

15 Appleton's theory refers to the inherent human behaviour of searching and evaluating landscapes aesthetically in terms of a threefold symbolic base: *prospect spaces* that can be evaluated from *refuge spaces* where one may remain safe and unseen from various types of *hazards* (1975, 73, 82). Christopher W. Totten has acknowledged this principle in game design (2014, 211–12).

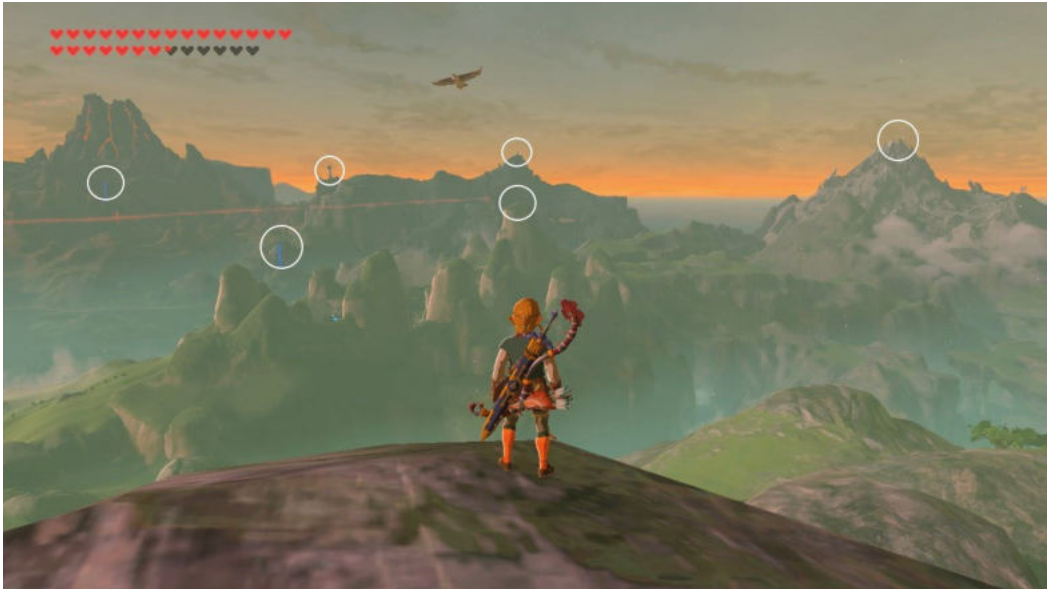


Fig. 4 The view from a mountaintop indicates *secondary vantage points* in the distance (encircled), which promise *prospect spaces* as well as various distractions on the way (shapes drawn by the author for the purpose of illustration).

Things to Do: Interaction in Game Space

Besides the two characteristics that relate directly to the systemisation and appropriation of game space, the third aspect of *airness* concerns the interaction with objects within it. It is remarkable that many open world games provide the player with a feature that lets them scan the surroundings with regard to resources, traces and enemies.¹⁶ Being no exception, *BotW* offers the ancient rune abilities *Magnesis* and *Stasis* that highlight interactable objects (and enemies) in the environment. Yet, they do not function as a mere pointing device but comprise more intricate features based on the game's 'physics system.' Along with the *Cryonis* rune, the twofold bomb feature, and a likewise complex so-called "chemistry system" (Fujibayashi, Takizawa, and Dohta 2017, TC 00:38:16–00:46:55) with regard to the natural elements, the player is presented with multifarious options to manipulate the environment and approach situations. The 'physics system,' which is based on the Havok Physics engine, influences objects in terms of collision and movement, while the 'chemistry system' handles state changes, for example the fire element can burn objects made of combustible materials such as wooden weapons, food items, or Link himself (*ibid.*). Importantly, these systems interact with each other in multiple ways and can be used for puzzles within shrines as well as in the complete overworld for combat, distance bridging, or other environmental puzzles.¹⁷ This systemic unrestrictedness and comprehensiveness is what makes *BotW*'s interaction unique:

In most games, the designers manually define a number of outcomes or interactions and allow the player to pick one, which restricts the player's freedom in interacting and removes the possibility of emergent gameplay. A more pleasing experience for the player is theorized to result when the player has greater freedom in terms of deciding how to interact with the environment (Sweetser and Johnson 2004, 322).

Thus, the player becomes involved by thinking about the solution of a puzzle or the overcoming of an obstacle in ever new ways. It also benefits the players to go through different modes of experiencing the game world while playing. Alternating between a cultural and a biological mode, landscape in video game worlds can either be perceived

16 *Witcher Senses* in *The Witcher 3: Wild Hunt* (CD Projekt Red 2015), the Focus device in *Horizon Zero Dawn*, Eagle Vision in the *Assassin's Creed* series, Eagle Eye in *Red Dead Redemption 2*, NetHack View in *Watch Dogs* (Ubisoft Montreal 2014), and the scan function in *Marvel's Spider-Man*.

17 This breaks with the conventions of *The Legend of Zelda* series because in former games, players were usually provided with items that were predominantly needed for just one particular dungeon system.



Fig. 5 The ancient rune abilities offer a wide variety of applicability, rendering Hyrule a *landscape as playground*. Here, the *Magnesis* ability is used to move a self-built vehicle high up in the air.

and appreciated for its beauty (*landscape as image*) or navigated with regard to one's own survival (*landscape as environment*) (Liboriussen 2008, 148). The former mode is increasingly reflected in the form of in-game photography. Since the use of the physics system in *BotW* is not always used for the sake of survival and progress, a third category, *landscape as playground*, seems conceivable for this kind of player interaction, where players appreciate playing around with *BotW*'s complex mechanics even after the missions have been completed (» Fig. 5).

Admittedly, this borders on the cultural mode, since the videos and instructions of testing out the mechanics are being shared in community platforms similar to memorable screenshots.¹⁸ As Miguel Sicart points out, a game's rule system creates a possibility space of potential interaction (2008). This space can turn negative if players' expectations are not met as to what they can do and whether they are rewarded for it (Doan 2017). With *BotW*'s various interlocking systems, Nintendo manages to fill the

18 At this point, the border between intended and *transgressive play* blurs, as the *Stasis* rune is used heavily in speedruns to allow players to bridge large distances rather quickly. Aarseth calls play practices that are not intended and predicted by the developers *transgressive*, in contrast to the developers' idea and expectations of the player as *implied player* (2007, 132).

negative possibility space to a large extent by offering extensive options for approaching a problem and secrets that reward the player for solving it, thereby strengthening the feeling of self-efficacy. For instance, spicy peppers can be lit on fire to produce an air draft that propels Link's paraglider upwards. The principle of not explicitly communicating to the players what is possible can induce a feeling of the sublime which is different from the sublime of being in awe of overwhelming nature. Daniel Vella argues for the *ludic sublime*: "Even after extended play has resulted in mastery of the game, there remains at least an opening for the possibility of surprise and further revelation—and the result of this is that the player's cosmic understanding of the game [...] can never be finally closed" (2015). Players are inspired to engage with the game intrinsic world and the game mechanics alike for a long time and discover playful mechanics like the cucco storm.¹⁹ Those are not desperately needed in any form, nor are they excessively helpful, yet they function as a reward for intrinsically motivated exploration and might create a stronger sense of player expression and agency. The concept of *airness* thus manifests itself in various interlocking aspects, including a huge possibility space and a low punishment for trial and error.²⁰

Given that *BotW* offers a wide range of possibilities to approach specific objectives or scenarios, seemingly unrewarding moments can still motivate the player as self-imposed challenges.²¹ Hence, filling negative possibility space relies on a balance between extrinsic and intrinsic motivation. Treasure chests in shrines and enemy camps, for instance, serve as extrinsic motivation. Since these rewards are—after some time of playing the game—rarely considered valuable, it is often the player's intrinsic motivation that propels them to go there regardless or try out whether something completely irrelevant to progress might work. This sandbox character with the *landscape as playground* also qualifies *BotW* for an abundance of creative playthroughs like Michelle Westerlaken's vegan run (Westerlaken 2017; Farca, Lehner and Navarro-Remesal 2018, 6).

19 If the avatar holds a cucco chicken when being attacked by an enemy, the cucco may summon an entire flock of chickens that will ideally attack the enemy.

20 For instance, in *Red Dead Redemption 2*, combat can become rather repetitive and unimaginative. Despite various kinds of weapons available, there are certain mechanisms of discouragement to strive for more creative combat: after a game-over screen outside of missions, the player-character will not spawn at the same place again, the horse might have died in the process, permanently, and even money is taken away. Consequently, the player must literally pay for boldness.

21 Graeme Kirkpatrick distils "a freely chosen challenge that is specified in terms of unnecessary rules" as the essence of a video game (2013, 42). Arguably, critically acclaimed and commercially successful games like *Minecraft* (Mojang 2009) and *Grand Theft Auto V* (Rockstar North 2013) seem to be so popular not because of their narrative value but because they offer huge, vibrant worlds with a sandbox character that encourage players to be creative for a long time to come. These two games rank under the three best-selling games worldwide (Sirani 2019).

Conclusion

The previous analysis has shown that *BotW*'s concept of *airness* signifies exploration performed for the sake of exploration and not merely in between pre-defined waypoints that are structured around a narrative arc. The narrative frames the events, but largely recede into the background. This precondition enables the three aspects of *airness* to unfold into the play experience of *BotW*. Neither the largely optional quests nor the topographic map to individually systemise game space restrict the players. On the contrary, in the form of a *canvas structure*, the open world of Hyrule encourages players to follow their own path and focus on the game content in their own pace. Similarly, the world design inspires a rather individual, immediate traversal, and explorative contemplation of space in terms of *prospect pacing*. Albeit rhythmising gazes and movements, it promotes active decision-making due to the avatar's movement mechanics. In this respect, the spatial design, including the *triangle rule* and constraints in form of climatic threats, configures an *interactive guidance system* that is less obtrusive than other forms of spatial player guidance. Intrinsic motivation becomes the essential driving force to progress in the game. This is supported by the complex 'physics and chemistry systems' that allow the player to trigger interactions between objects and elements, hereby also creating a *landscape as playground* to test out various strategies for puzzle solving and combat situations. Keeping little negative possibility space is so effective because the player is rarely disappointed in their expectations and even after many hours of playing, there are still secrets to be disclosed. All of these key aspects of *airness* elevate player agency and decisional power in many respects and render Hyrule a place full of opportunities, where there is not only scenery to explore but also plenty of air to breathe, allowing players to discover all the things to do on their own.

Figures

Fig. 1–5: Screenshots by the author (Wii U, Nintendo 2017).

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The Labyrinth

Digital Games as Media of Decision-Making

Rolf F. Nohr

Abstract The labyrinth is a metaphor, an ‘archetype’ and a praxeology of the game. It is an ambivalent formation of both orientation and disorientation. It evokes pathfinding as well as simultaneously blocking the (linear) path. It limits the subject and functions as a machine of training (or: trimming) and yet provokes the breakout and breakthrough. It is a metaphor for individual experiences of excessive demands, and it sees the maze as a function of order. The computer game is to be understood as a permanent labyrinth. The paper would like to focus on the figure and practice of decision-making. The centre of the digital game is therefore not any kind of unfolding narrative but the playing subject’s labour with the algorithm—the continuous attempt to understand the algorithms and ‘operate’ them correctly to win the game.

Keywords Labyrinth, decision, game space, algorithmic culture

Introduction

Starting from the idea that digital games exist in a kind of ‘fetishistic’ relationship to space and topology (see Nohr 2006), this paper will reflect on the figure of the labyrinth in relation to computer games. I want to argue that the spatial order of the labyrinth is not only a pragmatic order of space in relation to games (in a sense of limitation, guidance or steering of action) but also an architecture in the sense of translation and materialisation of decision-making as can be seen in the top-down perspective onto *Pac-Man*’s (Namco 1980) game world (» *Fig. 1*).

This chapter will focus primarily on the *architecture of the decision*, which is coded into the spatial configuration—and less on the spatiality of the game itself. The idea that game space is designed and structured in different ways is nothing new, and



Fig. 1 The labyrinth as game world in *Pac-Man*.

neither that its ‘enigmatisation’ can be created by means of labyrinths and mazes. So instead of thinking about labyrinths as genuine architectures in game space, I want to understand them as subject techniques.

The labyrinth is a central metaphor of the game. It is an ambivalent formation of both orientation as well as disorientation. It invites one to find their way as it simultaneously blocks the (straight) path. It limits the subject and is a training tool—and provokes subversion and emancipation as well. It is a metaphor for the individual experience of being overtaxed (like Theseus) as well as for the experience of making supra-individual order visible (like Ariadne). But here, I would like to argue that the labyrinth is to be understood as an *architecture of decision*. It is the materialised reality of a specific algorithmic decision rationality. Therefore, the central thesis of this chapter is that (certain) video games are to be understood as a permanent labyrinth and therefore as ‘machines of decision training.’

Fetishism of Space

Games seem to be strikingly dominated by maps, enclosed spaces or spread-out landscapes that invite one to stroll through them. The game, and that is obviously one of the central themes of this book, seems to use space as the central moment of its narration and functionality. Mastering the game space is the ‘ergodic work’ (Aarseth 1997) that brings computer gaming itself (as an experience) into existence. But this ‘game-space-work’ is worth a closer analysis—simply because the very specific interrelation of rules, game world, and gameplay form different and specific rationalities of action in different articulations. Each specific architecture of the game space has its own (discursive) rationality. With regard to the labyrinth, this is a very specific mode of action (or experience) that seems to be central here: the mode of exploration.

Following the idea of ergodic work, playing a video game (and especially interacting with its topology) is deeply interrelated with the mode of action. For our argument, we will deal with the mode of exploration under the conditions of a disguised and obstructed space. The genre of adventure games is not the only one dominated by the “gesture”¹ of exploring spaces. New doors and passageways constantly reveal further, linearly constructed, meandering or labyrinthine topographies that initially represent themselves as ‘white spots’, as abstract spaces covered by the so-called ‘fog of war’. It is the player’s spatial action, the walking, mastering, fighting or solving of puzzles that transforms these abstract spaces into a sensory landscape. In first- and third-person shooters, the situation is often similar. Here, these entangled spaces simply have to be appropriated: once freed from hostile NPCs, a space is then not only discovered within the topography of the game but also conquered (Gunzenhäuser 2002, 6). In short: the materiality of the actually intangible space of the game, which is necessary for goods to become, fetishises the game (and its space), making it something supposedly natural (Nohr 2006). Especially this last point, the naturalisation of the game (space), can be demonstrated, in my opinion, by taking a close look at the labyrinth.

- 1 Vilém Flusser articulated the concept of gesture as the subject expressing its being in the world through a range of movements and actions. For him, gestures are “movements of the body and, in a broader sense, movements of the tools attached to the body” (Flusser 2014, 1). These movements are expressions of intention—such as lifting a camera to your face to take a picture. The walking, exploring, driving, and climbing in computer games may also be understood as gestures, as expressions of an intention. The intention to act, an action that brings the game into existence in the first place. In a certain sense, this text is all about the gesture of acting in the surroundings of the computer game as a form of subjective expression.

Pragmatics of the Labyrinth

In the following, I would like to focus on a very specific, and—as I think—paradigmatic and also dispositive structure which is spatial, but also exceeds (game) space and topography: the labyrinth. What are the key features of a labyrinth? I would like to define the labyrinth as follows:

- A limited number of paths leading from an entrance to a destination;
- The paths are organised as a (more or less) binary structure;
- The destination is a promise: when entering the labyrinth, it is usually unclear what awaits us at the end of the path;
- The labyrinth's path is organised as a detour: a labyrinth contains the maximum distance within its confinements;
- The labyrinth provokes uncertainty: dead ends are always possible, detours probable, reaching the destination may simply mean turning back;
- The labyrinth is an enigma of space;
- The labyrinth turns abstract, calculated space into something that can be experienced subjectively.

In English, the terms 'labyrinth' and 'maze' are mostly used synonymously. As a result of the long history of *unicursal* representation of the mythological Labyrinth, however, many contemporary scholars observe a distinction between the two (e.g. Kern 2000, 53ff). In this specialised usage, the term 'maze' refers to a complex, branching, *multicursal* puzzle with choices of path and direction, while a *unicursal* 'labyrinth' has only a single path to the centre. A labyrinth in this sense has an unambiguous route to the centre and back and presents no navigational challenge (e.g. Saward 2017). I will ignore this—quite important—distinction, as it typologises the overview, but not the use: on entering a labyrinth, one does not know at first whether one has entered a *multicursal* or *unicursal* folded space. This knowledge only emerges after (or in the best case: while) using the labyrinth. And here, I am primarily interested in labyrinths in use.

By pointing to the idea of the labyrinth in use, we emphasise its performative characteristic. The labyrinth is an architecture that makes decisions distinct. Left or right, yes or no. The game labyrinth turns its players into Theseus, equipped with Ariadne's thread and a sword, in search of the Minotaur. The labyrinth is reduction and selection. In its essence, the labyrinth is a *teleology*.² The labyrinth organises the player's action

2 As long as you read *teleology* as a reason or explanation for something as a function of its end, purpose, or goal. Every path and every labyrinth has its *telos* (reading said *telos* as an end, or a purpose) and its *logos* (reading that *logos* as a reason to enter the labyrinth or to begin your

according to a purpose. It directs the path and the action towards a single meaning: the boss fight against the Minotaur at the end of the path. In addition, the labyrinth evokes a clear concept of the subject. The subject is controlled by the labyrinth—or processed by the topography of it. And the pure clarity of the labyrinth (its topology as well as its architecture) reflects the hidden processing, the calculating, and also the algorithm working ‘behind’ the ‘interface’ of the game labyrinth.

Pragmatics of Decision-Making

If we concentrate solely on the action level of the game (and the labyrinth), we neglect the other components of the game act (for example the aesthetic level) for the moment. However, I consider this to be meaningful inasmuch as, in my opinion, it is precisely at this level of action that the game’s central moment of effect is created (the subject effect) and thus questions of aesthetics, narration or immersion are ultimately questions of the player’s reality of action. This level of action is centrally shaped by the algorithmically impregnated space of the labyrinthine.

The genuine architecture of the labyrinth is thus a kind of decision support system. The labyrinth stages the decision-making as *the* central moment of the game process: outside every door, the same question arises: left, or right? In principle, the labyrinth stages the decision-making process as an act of action that is usually organised in binary form and directed towards a final goal. *The Stanley Parable* (Galactic Café 2013), for instance, is one of the most hilarious parodies of this binary logic (» *Fig. 2*). This act of action determines the game substantially and not just formally. The main idea of decision-making in the labyrinth has to be understood in a broader sense as a media technology that anticipates the operational nature of digital culture.

In that sense, certain formal procedures within digital media must be read as disciplinary procedures that force their users into a specific mode of decision-making, similar to the labyrinthine decision. Here, decisions are reduced, by the limitations of the code and the algorithms, to a narrow, distinct space of possibility. This is the birthplace of the lack of alternatives (“Alternativlosigkeit”). The use of such medialised decision support systems takes place under algorithmically determined conditions. German media theorist Hartmut Winkler speaks of “tunneled’ decisions” (translated

path). This special *teleology* of the labyrinth is only shaped by the computer game labyrinth: only here do we have the concept of pressure to act. Without action—no game. Without the will to win the game—no *teleology* of the labyrinth. The Theseus of a computer game is intrinsically motivated to find his Ariadne-Trophy and is therefore a subject of an almost Aristotelian *teleology*.



Fig. 2 “When Stanley came to a set of two opened doors, he entered the door on his left” (Galactic Café 2013).

from German by the author, 2016, 218), which are preformed and limited in a space of programmed decision preparation that turn the computer into a medium of the ‘or’:

The most basic implementation of the ‘or’ is the switch [...]; and this is the basis of all computer hardware—first as a switching transistor, and then combined into integrated circuits. Computer processors are now systems of billions of switches, characterised by the fact that they not only switch signal currents, but are also switched by signal currents [...]. In this respect, it is not surprising that the ‘or’ is closer to the computer than the ‘and’; and with the switch, the image of paths and crossroads returns once again [...] because an item can only be switched if it has been implemented as a switch/hardware beforehand (translated from German by the author, *ibid.*, 221).³

3 Orig.: „Die schlichteste Implementierung des ›Oder‹ ist der Schalter [...]; und dieser liegt—zunächst als Schalttransistor, und dann zu integrierten Schaltkreisen zusammengefasst—aller Computerhardware zugrunde. Computerprozessoren sind Systeme von inzwischen Milliarden von Schaltern, die die Besonderheit haben, dass sie Signalströme nicht nur schalten, sondern von Signalströmen auch geschaltet werden [...] Insofern ist es wenig verwunderlich, dass das ›Oder‹ dem Computer näher ist als das ›Und‹; und mit dem Schalter kehrt auch das Bild der

Winkler shows how decision-making in the labyrinth as a ‘medium’ strips the decision-making process of its praxeological and epistemological dimensions. The freedom of choice in computer games is similar to the promise of the consumer’s freedom of choice (as in online shopping):

It becomes a mechanical constraint to constantly have to choose ‘freely’. The concept of thinking is: Everyone wants to be well-informed, everyone wants to be ‘free’, to choose from 8,448 different jeans, toothbrushes, insurance offers etc. etc.... (translated from German by the author, Schröter 2015, 131).⁴

The interesting thing is that the player of a labyrinthine game is driven into an analogous (and yet algorithmic—see below) space of decision. Nevertheless, the game decision differs substantially from the act of choice while shopping at Amazon. In the digital game, every decision has immediate consequences.

Decisions: Limitations, Postponement, Rationalisation

How can we describe the rationality of the decisions evoked by the labyrinth’s path in the game? The specific (discursive) idea of decision-making that we are confronted with in digital realities is the idea of the cultural technique (“Kulturtechnik”). To put it more precisely: decision-making is a strategy for dealing with complex realities. This is primarily because every society develops certain cultural techniques to cope with complexity. A more precise description of the cultural technique of decision-making could be summed up like this: making a decision always means excluding alternatives. This pragmatic definition is the basic part of most decision theories: within the framework of decision theory, the term ‘decision’ is so broadly defined that it includes every act of choice. In general, decision is “the (more or less conscious) selection of one of several possible alternatives for action” (Laux 2005, 1). Ideally, this means reducing an ensemble of possible courses of action based on a specific order of knowledge in a rational procedure to the point of ‘alternativelessness’. This reduction and the planning ‘simulation’ of actions and consequences determines ‘correct’ options for action. Such an approach, which recognisably refers to a very specific concept of rationality, is a

Wege und der Wegkreuzung wieder [...] weil nur das geschaltet werden kann, was zuvor als Schalter/Hardware implementiert wurde.“

4 Orig.: „Es wird zum maschinellen Zwang, ständig ›frei‹ wählen zu müssen. Das Bild des Denkens ist: Jede/r will informiert sein, jede/r will, um ›frei‹ zu sein, aus 8.448 verschiedenen Jeans, Zahnbürsten, Versicherungsangeboten und und und auswählen, jede/r will ständig selektieren.“

discursive setting. Following Niklas Luhmann, on the other hand, shows that this way of thinking involves a temporally directed transformation of perceptual realities (2018, 122–46). Once a decision has been made, it eliminates the alternatives available at the moment of the decision—it erases the past.

The common denominator of the autopoiesis of decision-making is therefore uncertainty, uncertainty with the prospect of uncertainty. In what follows we shall therefore also be speaking of uncertainty absorption—not only in the sense that uncertainty is more and more reduced but also in the sense that uncertainty is built up at the same time, and thus renewed. [...] Thus, by fixing the result of its past as alternative, a decision generates an uncertain future. By presenting a multiplicity of possibilities as simultaneously given, it generates ignorance about how things are to continue (ibid., 132).

Retrospection exaggerates the decision we have made into a rationally legitimated decision—based on the lack of (former) alternatives. Such a decision rationality, however, is merely fragile in the game. We are aware of such concluding effects of the substantial decisions we have to make in the game.

For instance: Who to save while playing the Virmire level in *Mass Effect* (BioWare 2007)? *Mass Effect* is certainly one of the computer game series (2007–2012) in recent years that, from the very start, attempts to make the player aware of how important their decisions are within the game and what (alleged) consequences said decisions will have. Of course, a lot of this is nothing but good marketing: few of the elaborately staged decision-making situations substantially change the actual gameplay. Nevertheless, the series always successfully stages individual decisions as relevant experiences. For example, at the aforementioned point in the game where the player's avatar, Shepard, has to decide which of the two NPCs he will save: Kaidan Alenko or Ashley Williams. The entire, action-packed staging of this level forces the player into a situation in which they almost compulsively search for a way to save both characters. During the last hours of play, the player has spent a lot of time with both of them: They are sympathetically designed and may have been developed and individualised by the player by means of levelling and achievements. And suddenly, the level's labyrinthine system forces the player to decide which of her nicely shaped NPCs to sacrifice. This substantial decision is staged as a decision on the running direction: if the Shepard avatar runs to the left, he saves one, if he runs to the right, the other character will survive (» Fig. 3). No matter how fast he tries to reach the other direction after saving one character, Shepard can only helplessly witness the death of the other. Here, the act of decision-making is exaggerated into a dramatic sacrifice which pushes the player into an Old Testament-style situation: in Abraham's shoes, the player has to sacrifice one of his two Isaacs—always in the hope that God's voice will prevent the sacrifice at the last



Fig. 3 Decision of who to save in *Mass Effect*'s Virmire level.

second this time around, as well—until the player is forced to realise that, at this point, the game is a God who takes no pleasure in trial action.

How typical is a decision-making situation like the ‘Virmire dilemma’ described above? In some ways, it is very typical. Computer games in their historical and aesthetic differentiation seem to make the act of decision-making more and more central to a core element of the textual and formal structure, a development recently described as “decision turn” (Schöffmann, Unterhuber and Schellong 2016). Think of the highly formal, narrative and discursive efforts that developers like BioWare or Telltale have implemented in their games to suggest the irreversibility of decisions, and how important the documentation and evaluation of decisions seem to be for games like *The Walking Dead* series (Telltale Games 2012–2019) or *Life is Strange* (Dontnod Entertainment 2015).

The effort of implementing and quantifying decision-making in games aims at a simple aspect of game design and game functionality: trial action. Every decision in the game seems to be reversible at first. Every player can respawn, jump back to the last save point and undo everything. Up to now, the decision-making rationality that characterised digital games for a long time was (and is) the ambivalence of reversible decisions (which thus seem to be substantial) and decisions that are trivial and thus eliminate reversibility. They are irreversible by marginality. And these marginal and trivial decisions are, according to my idea, coded into the path structure of the labyrinth. It is the sheer quantitative number of decisions that makes the chain of labyrinthine decisions an ultimately *teleological* act. Even before I take my first step into a complex labyrinth, I may decide to just turn left at every fork, hoping to reach my goal this way. But I will not reload at every fork or start over again.

There are, generally speaking, only two options for action: either to proceed through the maze in a very planned and strategic manner by following a pre-set plan or by trying to find the exit in a type of trial-and-error method. Most of the time, the chosen action concept is undermined by stressors in the game: attacking enemies. Nevertheless, walking through a labyrinth, regardless of whether it is a pleasure walk or a storm run, is a long chain of trivial decisions. By making those irreversible, I turn trivial decisions into an algorithmic machine. But the decision-machine I am turning into is not supposed to carry out performative actions. And this not only because every action in the game is always merely a symbolic action but also because the trivial decisions cannot be made at all. Every actual decision in the labyrinth has already been predisposed.

Following Hartmut Winkler (2016, 218f), I would like to separate two specific spaces with regard to decision-making: a space of possibility and ‘decision preparation’, in which decision alternatives are made recognisable within the framework of a discursive operation in a ‘space of preparation’ and the ‘decision space’ itself (terms translated from German by the author). For the labyrinth, this seems obvious: ‘decision

preparation' is the conceptual decision to recognise a labyrinth as such, to enter it and to know that one can and should walk through it. The actual decision-making act (or space) is the (iterative) question: to the right or to the left? But how does this division relate to the decision-making act of the Virmire level? The player wants to save both NPCs, but the game system (the algorithm) has already predisposed its decisions differently: Shepard can only save one defined software entity. The actual decision space is limited in a different manner than the player would like to assume. This offence against the player (of which—more than a dozen years after the game was published—many game forums on the internet still provide eloquent information) is the experience of having to enter a different space of possibility than one had assumed from the perspective of alleged self-determination. The actual decision space is more limited and predisposed than the free 'self' had assumed. But actually, the conflict (or trauma) that occurs here is an inherent part of the digital game, which is always predisposed by algorithms. Every space of decision preparation is coded into the algorithm and the subject always only enters the limited decision space. In short: in computer games, you do not decide if and how to enter a labyrinth—you are thrown into a labyrinth in which all junctions are already bricked-up and you are drawn through a nicely designed tunnel as if on rails. It is impossible to make (wrong) decisions here. If you fail, you are just too stupid to walk straight.

The decision-making space only becomes a rational space through the preceding predisposition process, in which the decisive subject can choose between preselected and predisposed possibilities. But the computer game completely outsources this predisposition to the algorithmic system, meaning the rationality of decision is impregnated by the logic of the calculus and not of free will. Due to predisposition, the algorithmic discourse thus secures the field of selection by reducing the contingency of reality to such an extent that it defines a field of rational decision in which the subject can become active in the first place. Applied to computer games, this means that the actual passage through the labyrinth opens a possibility space, and the actual game design must be read as a predisposition of decision trees. The point is that this predisposition only becomes this obvious and exciting in (rare) examples such as the abovementioned *Mass Effect* moment. Much more often, we—playfully—take the restriction of our power of action by the rigid predisposition of game design as given and natural. This predisposition is organised and stabilised by the pressure to act which is inherent to every game. Only those who act, play; only if there is action, is there a game. A typical example for this is a seemingly brief moment in *Portal 2* (Valve Corporation 2011), when NPC Wheatley urges the player more or less obtrusively to push the red button highlighted in the level structure (» *Fig. 4*):

Wheatley: *cough* Button.
 Wheatley: *cough* Button. Button.
 Wheatley: *cough cough* Pressthebutton.
 Wheatley: *cough* PRESS THE BUTTON.
 Wheatley: *cough* Press the button, would you?" (ibid.)



Fig. 4 To press the button or not to press button in *Portal 2*.

The algorithmic structure of the computer game generates an overpowering evocation of action. It seems nearly impossible to avoid the call to action that is evoked by a softly glowing and obviously visible button that is the only manipulable image object in a locked room. How can we *not* act here? Pushing the button not only means making a (trivial) decision in a narrative or topological surrounding but it also means making the decision to play on: to open the next door, enter the next room, smash the next wooden box, kill the next enemy. Trivial decisions are interrelated with the act of action. Decision-making is the subjective task that brings a computer game to life. Decision-making is action. And action leads to reward: Whoever presses the button may continue to play, will continue to make decisions. The one who acts may pass through an opening door, the one who acts will obtain the high score, achievements, extra lives. The one who acts has already decided.

As Luhmann argued: The act of decision eliminates its alternatives (2018, 134f). If I go left, the left door closes irreversibly behind me, and the right door will disappear (as long as I do not go back to the last save point). They are not meant to be a trial-and-error action (see Nohr 2013). As already indicated, the decisive (ideological) ‘impregnation’ of the labyrinth takes place by creating models and algorithms that ensure control over the playing subject in the topography. This control not only contains its path but also its freedom of choice, by limiting decision possibilities through the rigid administration of decision predisposition. The specific rationality that underlies the concept of decision used here is closely related to the concept of the topographical rationality of the labyrinth.

But there, of course, lies the main difference: in computer games we have to make decisions, and our decisions will have *symbolic* consequences (e.g. Kaidan or Ashley will die immediately, but nobody will be hurt). However, that is not the case in everyday life: here, the consequences of decisions are infinitely delayed. If one decides to build an airport (for instance in Berlin), one will never really experience the consequences of this decision. If one decides to build an airport in *SimCity* (Maxis 1989), it is completed with a click.⁵ Or to quote Gilles Deleuze and his *Notes on the control society*: “In the disciplinary societies one was always starting again (from school to the barracks, from the barracks to the factory), while in the societies of control one is never finished with anything [...]” (1992, 5).

Perhaps it is this suggestion of power to act that reconciles us with the limitations of our decisions? Perhaps we are ready to give up our freedom to go where we want to, to finally face the choice of freeing Ariadne or being eaten by the monster? Perhaps the promise of ‘either–or’ is so efficacious because in ‘real life’ freedom of choice only means choosing between 8,448 different pairs of jeans?

Quintessence

Let me collect these scattered ideas: in computer games, there is a ‘fetishistic’ relationship to space and topography (as well as to topology). The labyrinth is the central metaphor and a praxeology for computer games. The playing/walking subject is processed through the topography of the labyrinth. But the impact of the labyrinth is not a spatial effect—it is more or less a good metaphor for a certain governmental power relation. The key element is the transformation of decision-making into an action-based concept. To the player, this action seems to be naturalised: making distinct decisions and coping

5 Winkler and Adelman outline an action theory of computer games by referring to the cultural concept of Norbert Elias and describing computer game action as a kind of compensation for the ‘action-effect delay’ that accompanies modernisation (2014).

with an enormous number of trivial decision situations seems normal to the inhabitants of digital cultures. The specific (discursive) idea of decision-making with which we are confronted in digital realities is a cultural technique. Making a decision under pressure always means excluding alternatives. The decision rationality that actually distinguishes the game is thus the ambivalence of allegedly reversible decisions (which therefore seem to be substantial) and decisions that are trivial and thus elude reversibility. Therefore, decision-making in a computer game is immediate and has consequences. Even though, or precisely because, the game is symbolic, it differs substantially from life.

The labyrinth in the game is therefore part of a kind of decision support system (DSS).⁶ Current informatic DSSs work on an (albeit not radically displayed) ‘elimination of irrational subjectivity’—at least in the sense that the subject of decision is connected to a regulating and adjusting system of decision processing. The labyrinth as DSS is founded in an archaeological and genealogical line that stretches back to the development of hard- and software in the 1950s to 1970s. Here, various actors explored an epistemology of decision-making that was specifically triggered by the algorithmic logic of the computer, especially its capacity to simulate spaces of action, wherever and whatever they might be. Predictably, the military-industrial complex (e.g., the RAND Corporation) were interested in winning wars and making money. But as this epistemology spread throughout industrialised societies, a discursive shift began to occur in many tangential ‘spaces of action’, a shift characterised by a hybridisation of military, economic, pedagogical, and psychological operationalisation designed to amalgamate and naturalise the computerisation of human decision-making. A lot of different protagonists, institutions, parts of the military-economical complex and sciences can all be understood as individually and collectively contributing to the rise of a widespread and widely admired epistemology determined by the core idea of an objective control rationality. This epistemology articulated the countless ways in which human, social, economic, and even cultural values could be gleaned from the transformation of contingency and reactivity (i.e. subjectivity) into calculable processes that, while not fool-proof, purported to lever probability towards any desired end (to make this short story long, see Nohr 2019a; 2019b). In a certain sense, a variety of computer games can be read as DSS, systems that allegedly assist the subject by limiting, for instance, the choice between a number of possibilities or orders of complexity. But they also assist player-subjects in situating themselves in a specific order of rationality designed to severely limit the scope of decision processing.

6 The constellation of the DSS can be found in Herbert Simons and Allen Newell’s *General Problem Solver (GPS)* from 1957, as well as in the work of researchers such as Doug Engelbart, one of the pioneers of the personal computer. In the literature of this time, it is fascinating to observe how various central and marginal stakeholders euphorically took up the banner of programmed decision-making (cf., Haigh 2007, 59).

Decisions made by the player in the labyrinth of their possibilities are no longer subjective. The player is now part of a decision algorithm. And this algorithm cannot be controlled—it does, however, strive for hegemonic control over the subject. This emphasis of the algorithmic can also be found in the works of Alexander Galloway (e.g. 2006). His methodological idea aims at understanding computers (and computer games) as leading technologies and media of a current (so-called) “algorithmic culture”. Galloway also defines the Deleuzian control society as its guiding principle. Computer games fetishise the mode of control: both narratively and through the inherent logic of information. The centre of the digital game is not any kind of unfolding narrative but the playing subject’s labour with the algorithm—the continuous attempt to understand the algorithms and ‘operate’ them correctly to win the game. In my opinion, game labyrinths are the material architecture of the algorithm.

Figures

Fig. 1: Namco 1980 under fair use (uploaded by ‘CountingPine’, June 28, 2007);
<https://upload.wikimedia.org/wikipedia/en/5/59/Pac-man.png>.

Fig. 2: Uploaded by Aley ‘The Animist’ Duncan, January 27, 2014,
<http://theanimistblog.files.wordpress.com/2014/01/choice.jpg>.

Fig. 3: Uploaded by “The Sword Emperor” March 7, 2012, BioWare 2008,
<https://theswordemperor.files.wordpress.com/2012/03/save-kaidan.png>.

Fig. 4: Screenshot by the author (Valve Corporation 2011).

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3. Identity, Reflection, and Spatial Challenges

Navigating Self-Reflexive
Game Worlds

The Aesthetics of Non-Euclidean Game Spaces

Multistability and Object Permanence in *Antichamber* and *P.T.*

Hans-Joachim Backe

Abstract In recent years, an increasing number of games have created spaces which radically depart from our experience of space in reality. Digital games have used clandestine relocations of the avatar and semi-scripted reconfigurations of game spaces to great effect. Often characterised as non-Euclidean, virtual environments such as these foreground otherwise barely noticeable principles of navigation. Drawing on the well-established theories of game spatiality, neuroscience, and developmental psychology, this article investigates how two of the most well-known and extreme examples, *Antichamber* (Demruth 2013) and *P.T.* (7780s Studios [Kojima Productions] 2014), defamiliarize game spaces and their navigation. The result is an identification of shared aesthetic principles of non-Euclidean game spaces, which evoke fundamental disorientation and helplessness by withholding information we learn to rely on in reality at an early age for basic cognitive processes.

Keywords Aesthetics, multistability, game space, phenomenology, game design, neuroscience, horror games

Introduction

Spatiality was identified as one of the central challenges of digital games already in some of the foundational texts of game studies. Janet Murray (1998) assesses spatiality as one of the four distinctive properties of virtual environments, while to Espen Aarseth, spatiality is even the “*raison d’être*” of computer games (emphasis in the original, 2001, 161). Unsurprisingly, games research has produced numerous typologies

(e.g. Nitsche 2008; Günzel 2008) and ontologies (Fernández-Vara, Zagal, and Mateas 2007) of virtual environments and engaged with their aesthetics (Švelch 2008, 214; Fernández-Vara 2011). Other approaches put the player's physical and psychological relation to virtual environments in the centre. Questions of embodiment and immersion appear as particularly pertinent, both on the individual (Taylor 2003) as well as collective level (Babic 2007), because the experience of virtual environments is unlike that of reality or that of traditional depictions of space. A player of digital games "experiences a phenomenon that cannot be experienced in traditional imaginative space, namely the experience of motion as navigation. [...] Thus, [...] computer games are characterized by the fact that they present artificial navigation" (Günzel 2008, 172).

The result is an *aporia* common to all research on virtual environments. Characterised by "fundamental differences" (Nitsche 2008, 3) from what we encounter in reality, they are not spaces but a representation of space that is not in itself spatial, but symbolic and rule-based, or, in other words, "allegories of space," "a three-dimensional scheme carefully designed to offer a balanced challenge to the player" (Aarseth 2001, 168). And still, these essential differences notwithstanding, players will inevitably approach them based on (perceived) similarities to reality. Games do not reinvent patterns of spatial use but reuse, reapply and restructure basic patterns that occur in reality. The fundamental situations of play correlate with familiar spatial configurations because any environment is experienced based on what we *do* in it (McGregor 2007). The empirical observation that architectural theory and real-world facilitation of navigation translate well to virtual environments (Totten 2014) has been theorised as the "shared fundamental experience of the way our knowledge of space develops both inside and outside of the video game" (Fraser 2011, 102).

How this transfer of knowledge from the real to the virtual works exactly is rarely foregrounded, while it is apparent that most games work towards making it effortless. Yet in dealing with virtual environments that depart from the parameters of reality in fundamental ways, the differences become unmistakable. The most well-known and well-researched departure from real life is the use of portals, warps, or wormholes (Gazzard 2009; Leirfall 2013), i.e. means of traversing space that have been theorised as well as depicted in fiction, yet have no equivalent in reality. Moving in this way disrupts the sequential fluidity of paths, temporarily takes navigational control from the player, and calls into question the coherence of time, space, and causality (Gazzard 2009, 2). In *Portal* (Valve Corporation 2007), the prototypical example for games with such environments, the use of portaling is the central game principle, and accordingly follows static and predictable rules, derived quite faithfully from real-world physics. The spaces of *Portal* only change in ways that are compatible with our experience of spaces in reality, and generally do so in plain sight and with the cause of their reconfigurations (pistons, tracks, rails) exposed.

Some games confront players with spatial situations that are cognitively different from spaces encountered in real life, and appear as featureless or impermanent. In doing so, they not only defamiliarize movement, but space itself. The game environments of the chosen examples—*P.T.* (7780s Studios [Kojima Productions] 2014) and *Antichamber* (Demruth 2013)—are sometimes called non-Euclidian to identify their deviation from real-world spaces.

The logic of space postulated by Euclid forms not only the fundamentals of geometry, but is at the root of conceiving of space as a neutral, static container within which things happen. In mathematics, ‘non-Euclidean’ refers to the complications produced by curved surfaces, where the angles of a triangle add up to more than 180 degrees (Hartshorne 2000). Non-Euclidean virtual spaces deviate from the laws of simple geometry in a different fashion. Most games resort to tricks of reconfiguring their game spaces, making things appear connected that are not, and teleporting the avatar, mostly to optimise performance, but do so without drawing attention to it. The games discussed here use the same techniques, yet instead of hiding them to make the game space appear more similar to reality than it actually is, they do the opposite: instead of streamlining the avatar’s progress, they have them move in circles. These spaces produce a very particular, primordial form of cognitive challenge. They are ontologically different, yet in a way that is not immediately apparent, and which undermines the player’s ability to use fundamental spatial epistemologies acquired as infants. What we encounter in these game environments therefore goes beyond disorientation or even cognitive dissonance (Cooper 2007). It is a throwback to a stage in child development before the attainment of object permanence.

In the following, I will briefly outline the challenges posed by the examples and discuss the pertinent game studies concepts, particularly uncertainty and agency. Having thus identified the theoretical challenges, I will go into more detail with spatial epistemology, showing that there are recurring challenges posed by spatial multistability and universal strategies humans develop early in life to cope with them. I will then return to the examples to discuss how they undermine said strategies and how this creates a very specifically unsettling feeling in players.

Challenge Spaces to the Second Degree

The digital games chosen for this article are by far not the only ones to exhibit the features discussed here, yet they do so throughout the whole of their gameplay, and while one of them contextualises its spatiality within discourses of insanity, the supernatural, and the loss of cognitive faculties, the other presents its ever-changing environments as a given.¹

P.T. was released as a platform-exclusive game on Sony's PlayStation Store as a part of a mystery advertising campaign. Eventually, players realised that *P.T.* stood for 'playable teaser' and was a preview for a new *Silent Hill* game.² In its minimal gameplay, the player controls a first-person avatar whose abilities are restricted to walking and minimal interaction. Spawning in a bare concrete room with only one door, the player steps into an L-shaped hallway which leads past the locked front door of the house they are in, ending in a featureless room similar to the one they begin the game in. In this room, a short flight of stairs leads downward to another door. Stepping through it, the player finds their avatar back at the entrance of the L-shaped corridor. All of *P.T.*'s gameplay takes place in this strange spatial loop, varied through locked doors that can be opened by solving increasingly obscure puzzles, surrounded by gruesome details, a haunting soundscape, and the occasional jump scare. The basis of the nightmarishness of the overall experience is, however, the unsettling space that appears to loop back on itself.

Antichamber, the second example, is a first-person game like *P.T.* or, maybe more accurately, like *Portal*, with which it shares the appropriation of the gun metaphor for different purposes. The player is trapped in a labyrinth of featureless white hallways, equipped with a gun-like tool that allows them to manipulate small, coloured cubes. Not only do the untextured white walls provide few landmarks for orientation, but walls and floors are impermanent and might manifest or disappear for a number of reasons, including whether or not they are being looked at. Gameplay revolves around navigation through the labyrinthine, shape-shifting hallways and activating mechanisms, elevators, and doors by using the small coloured cubes to e.g. open doors. One of the first puzzles of the game is a staircase. No matter whether one takes the left downward path doused in deep red light, or the right upward path illuminated in blue light, the avatar ends up in a straight hallway that, after three right-angle bends, leads

- 1 I apply the same approach and many of the same theories to further examples in a paper focusing on the aesthetic potential of non-Euclidean spaces outside the narrative context of horror and existential dread (Backe 2020).
- 2 For undisclosed reasons, Konami decided to withdraw *P.T.* from the PlayStation Store, the sole source of distribution, setting a precedent for a major publisher attempting to delete a game from public discourse, making the game an urban legend and turning PlayStation consoles with the 30-minute game installed a collector's item with skyrocketing prices.

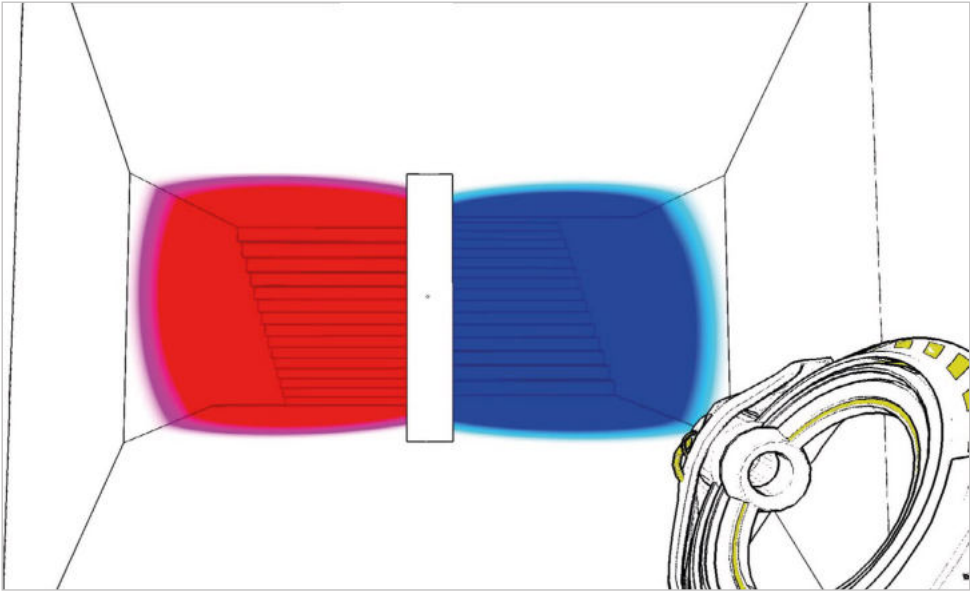


Fig. 1 The initial stairwell in *Antichamber*.

back to the same staircase (» Fig. 1). The solution to the puzzle is to turn around and walk away because after taking the stairs once, the path behind the avatar has changed and now leads to a different, bright green archway. *Antichamber* achieves this and many of its other dazzling effects by teleporting the avatar in a way that goes unnoticed by the player, a technique used in countless other games as devices of convenience for developers. Yet, where other games use this technique as inconspicuously as possible, *Antichamber* uses it to thoroughly defamiliarize movement and spatiality. Throughout the length of its campaign, *Antichamber* exposes the artificiality of game environments as much as the fact that their traversal can pose a significant challenge in itself. Here, spatiality truly is the game's "*raison d'être*."

The spaces in *P.T.* and *Antichamber* are, of course, not unusual simply because they pose a challenge to the player. Challenge spaces are the first of six patterns of spatial use in digital environments identified by Georgia Leigh McGregor, and they are ubiquitous in games of all genres: "Problems of navigation and environmental obstacles, whether they require a simulated physical response by the player's avatar or an intellectual solution, are configurations of challenge space" (2007, 540).

The difference lies in how they construct the challenge. Greg Costikyan has identified 11 distinct types of uncertainty in games, four of which we find in the spaces of the examples. Analytic complexity is present here, as in most challenge spaces, because sometimes, the spaces need to be approached like puzzles in that multiple elements

need to be evaluated both individually and in their relation toward each other to arrive at a single, non-obvious combination. Somewhat rarer for challenge spaces is hidden information, which to Costikyan is most commonly achieved through fog of war. To him, navigating such environments is an “exploration—but of the parameters of the system rather than of physical space” (2013, 93). What sets the spaces in the example games apart from traditional uses of fog of war is that the player’s exploration does not change the presentation of the world. Arriving at an understanding of how to navigate specific passages is traditionally paralleled with rendering this epistemological process palpable in a map or the world itself, which happens neither in *P.T.* nor *Antichamber*, at least not in an unambiguous way. Through this, the games add an element of uncertainty of perception, “the difficulty of perceiving what’s going on in the game space” (ibid., 101). Even when the perception of things is not actively impaired, many game elements are characterised by semiotic contingency, forcing the player to perform considerable hermeneutic work to interpret the ambiguity of signs. So, while in most games “[m]ultiple paths, open landscapes and convoluted layouts require the player to negotiate and remember spatial configurations” (McGregor 2007, 540), *P.T.* and *Antichamber* are designed to complicate and even resist these basic problem-solving strategies.

In fact, even basic navigation is complicated in both games. In *P.T.*, it is impossible to tell whether one walks in circles or moves through a series of nearly identical spaces. *Antichamber* adds to this by imbuing otherwise irrelevant parameters with meaning, like when a threshold can be crossed only while walking backwards. In both games, the environment withholds information about spatiality generally taken for granted, and thus becomes hard to “read,” in the sense that “players need accurate information about their state in the game and will make choices based on that information” (Sicart 2013, 87). This feedback loop of receiving updates about the game state and acting upon it was influentially identified by Murray as the source of agency in virtual environments, “the satisfying power to take meaningful action and see the results of our decisions and choices” (1998, 126). Game designer Paolo Pedercini has suggested that the lowest level and the precondition of any deeper feeling of agency is the control of purposeful movement: “As long as the players feel in control of movements in space, even the most linear narrative and the most constrained level design will provide enough agency. In a way, that’s what we’ve come to expect from mainstream games” (Pedercini in Sicart 2013, 104). Withholding or disturbing agency has been identified as a powerful aesthetic strategy in digital games (Habel and Kooyman 2013; Wilson 2003), yet the cognitive disenfranchisement of *P.T.* and *Antichamber* is unlike the frustration of malfunctioning controls or work-like game mechanics used by other games (Johnson 2015). Here, players encounter less “the human pleasures of lack of agency, of being controlled, of being acted upon” (Giddings and Kennedy 2008, 30) than a fundamental sense of disorientation.

Spatial Epistemology, Multistability, and Object Permanence

Yet, what are the principles commonly found in digital games that *P.T.* and *Antichamber* deviate from? The experience of space in digital worlds, just like that of time, is never isomorphic with reality. To this day, great conventionalisation dominates the design of game spaces even in Virtual Reality. Digital game worlds still customarily foreground similarities to real life architecture, movement, and social behaviour. The sense of spatial presence “is best understood as the sense of being physically located in a virtual environment [...] or interacting with virtual objects as though they have actual, physical properties” (Tamborini and Bowman 2010, 88). In other words, a virtual space is a combination of the generality of fundamental spatial articulations (figure-ground, solid-void) and the expressive, communicative specificity of a fleshed-out virtual environment (Totten 2014, 104–12). The former organises and channels gameplay, while the latter creates meaning and atmosphere, effectively turning a space into a place: “A world with a properly defined sense of place is a world that players can learn to use” (ibid., 323). These two articulations of space are epistemologically different: the first we approach in the Euclidian tradition as an absolute, as a container, as “arrangements of bodies, a geometry of things in themselves” (Babic 2007, 2). The second, the details of an environment, is processed as a relational space as described by Henri Lefebvre, in which space does not exist a priori, “*but only through the context given by the relations and interactions of the actors and objects within*” (emphasis in the original, ibid., 2).

In one of the few dedicated studies of the epistemology of space in digital games, Benjamin Fraser posits that “the epistemological mode of video games is the epistemological mode of reality” (Fraser 2011, 95). He argues for an understanding of spatial epistemology in digital game environments as a form of *mētis*, the Ancient Greek concept of embodied, tacit knowledge of practices that are only learned through experience, not study. Fraser goes so far as to declare: “there is the shared fundamental experience of the way our knowledge of space develops both inside and outside of the video game. [...] [T]he method through which we form knowledge of video game space is in fact the very method through which we form knowledge of ‘real world’ urban spaces” (ibid., 102–3).

Where Fraser foregrounds the similarities between our epistemologies of real and virtual spaces, Bjarke Liboriussen suggests that phenomenologically, the landscapes of games are experienced simultaneously as environments and images (2008). He draws on Jean Piaget to distinguish between three phenomenologically distinct levels of spatiality: On the most basic level, termed *topological space*, an environment is perceived; if perception alone is insufficient, perception is augmented with imagination in a *projective space* that creates an idea of a place; on a yet higher level of abstraction, the *metric space* of a landscape is created purely through (in Piaget’s terms) imagination or (Liboriussen’s conceptual update) cognitive mapping (Liboriussen 2008, 152).

Subsuming these reflections, the understanding of and orientation in game spaces are crucial for exerting agency within them, and players process these spaces analogously to both their experience and mimetic depictions of reality. Being able to process the spaces of digital games explains how “my sense of embodiment can become distributed across both sides of the glass” (Keogh 2018, 4–5) to form an “amalgam embodiment in and as a part of the videogame performance” (ibid., 28). Embodiment in a game world, particularly from the first-person perspective found in both examples, “might be called ‘whole body activity.’ This is to say that we humans are multidimensioned perceptually; that kinaesthetic-sensory actions are primary and implied in all our activities; and that this is the basis for what we take to be our opening or relation to any ‘real’ environment” (Ihde 2012, 134). For post-phenomenologist Don Ihde, “perceptual isomorphism” (ibid., 136) is the key to successful simulation environments in e.g. flight simulators. Ihde suggests that we switch our attention involuntarily back and forth between the virtual and the real embodiment in a quite classical form of bistability.

There are, however, two additional forms of multistability at work in navigating game spaces. Players ‘read’ the environment for directional and behavioural clues, in which the aesthetic dimension of elements often is what makes positions and paths memorable, and where different types of environmental (Jenkins 2004) or indexical (Fernández-Vara 2011) storytelling convey information that can simultaneously illuminate a fictional as well as the factual past of a game world and give the player valuable strategic clues. Both strategies are more closely related to the aesthetic multistabilities than the functional ones Ihde focuses on. Cognitive science indicates that both visual and semantic ambiguity are resolved through oscillation of focus (Yevin 2006, 79). In the arts and literature, ambiguity stems from diverging—often even opposing—meanings that are produced by the same sign configuration, yet “according to the common law of perception of ambiguous patterns, an oscillation of our attention takes place, and we see in turn either the actor or his role” (ibid., 81). The visual and semantic multistability of traditional aesthetics is therefore one of perceiving a static object in different, objectively co-present and therefore equally legitimate ways. In the bistability of alternating incorporation in the real and virtual body, both the player’s body and the configuration of their relationship to the virtual world are generally static and reliable.

Non-Euclidean spaces in digital games exhibit additional spatial multistability: in them, navigational paths are not isomorphic with the perceived environment, and the objects change when interacted with or even just looked at. To return to the examples: *P.T.* has its players repeatedly walk through what both seems simultaneously the same and not the same corridor. On the most fundamental level, this is a simple variation of Euclidean logic: The hallway of *P.T.* appears to remain identical in form and shape while its contents change—space is an apparently neutral container. Moving down the

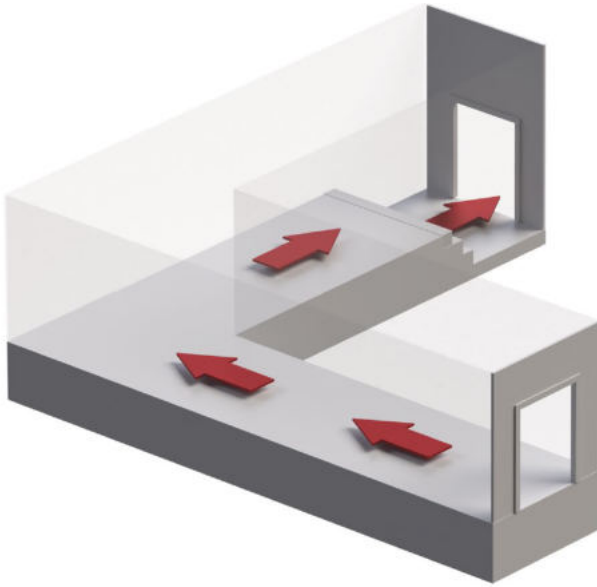


Fig. 2 The individual corridor in *P.T.*

corridor, rounding its single corner, exiting the door on the far end, the player finds themselves stepping through the door into what appears to be the same corridor again (» *Fig. 2*). Disorienting as it is, this relocation might be shrugged off as a clandestine teleportation back to the entrance. There are, however, two complicating factors. The first is that the hallways always have the same layout, but differ in decoration and furnishings. This can be explained either temporally—these changes happen in the time it takes to move from the exit back to the entrance—or spatially—there are not one, but many hallways.

The second complicating factor is the short flight of steps at the end of the corridor, leading down into a windowless basement room. The players descend every time they reach the end of the corridor, which means that regardless of whether they perceive one or several hallways, the path of the player character is a downward spiral (» *Fig. 3*). This is not only symbolically relevant—in the supernatural world of *P.T.*, one would be hard-pressed to not understand this motion as a descent into madness or hell—but contributes to the disorientation the space evokes. The three conceptions of the space—an identical hallway undergoing changes through time, many nearly-identical hallways located in the same space, and a downward spiral of iterations of the same room—are three states of a multistable object.

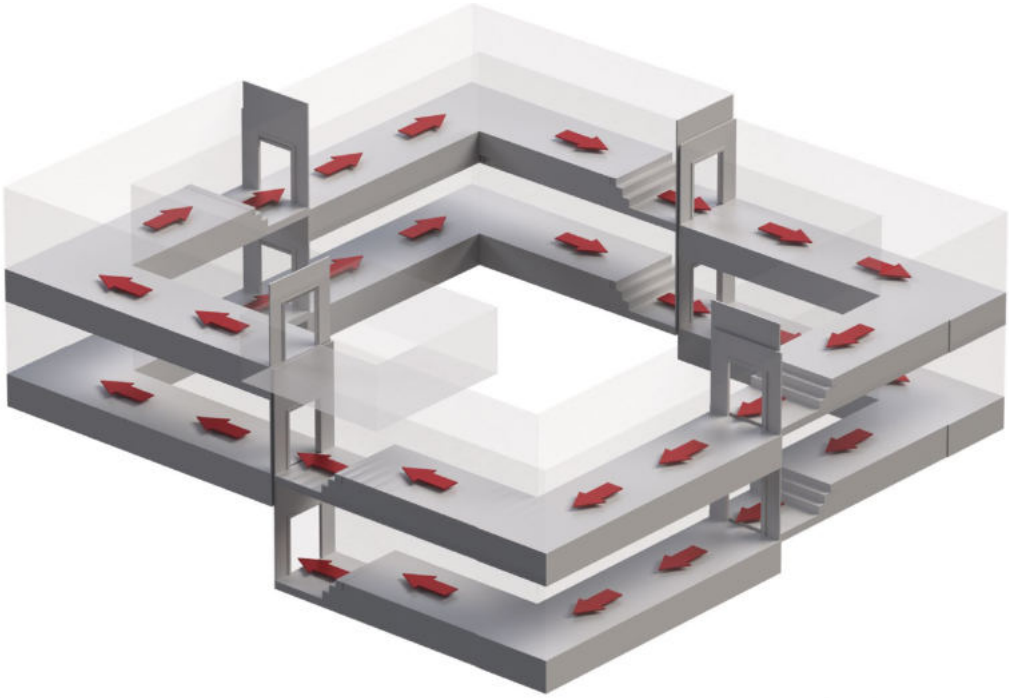


Fig. 3 The string of corridors forming a downward spiral *P.T.*

The stairwell in *Antichamber* functions similarly, bringing the player back to where they started after walking downward or upward. While the navigational path and perceived space are anything but isomorphic in both cases, the geometry of the space is less defamiliarizing than that of *P.T.* Here, the player rounds three corners before returning to their starting point, thus preserving at least correct directionality. Whilst *P.T.* unsettles the player through sometimes minute changes in the interior's arrangement between different versions of the hallway, *Antichamber* omits any and all detail. Untextured white walls make it impossible to distinguish one from another, turning the interspersed coloured lights into abstract, unambiguous markers of particularity. The only elements of the game world the player has direct agency over are coloured cubes which can be used for many purposes, from activating switches to building walls or platforms. They are, however, highly impermanent and evaporate under a number of circumstances. Even some walls, floors, and ceilings have varying solidity depending on e.g. whether the player is looking at them or not. Most of the game's doors will close behind the avatar, but in many cases, it is nearly impossible to determine when

their threshold is crossed, i.e. how far into a corridor the avatar can safely move before blocking off the way back. The only way to grasp the details of geometry in this case is to keep the gaze fixed on the door and move in the smallest possible increments, and to eventually mark the point of no return or block the door with one of the game's user-manipulable cubes. Only then may the player feel safe in turning their avatar's back to the door in question, by virtue of having reaffirmed object permanence. All these actions produce, however, only what might be oxymoronically called temporary permanence as the in-game objects the player controls, the cubes, are impermanent and will be removed from the avatar's inventory in airlock-like transitory spaces and more importantly, reset to their original positions upon the avatar's (very frequent) respawns.

The result of this combination of featurelessness and constant change is a form of multistability that differs fundamentally from the visual and semantic forms, which rely on the perception of a static object in different, equally meaningful ways. The profoundly unsettling effect of these environments results from an ambiguity that cannot be resolved with familiar methods because the multistability of the object is not perceptual but ontological.

Differently put, the objects encountered in non-Euclidean game spaces lack permanence, and thus subvert one of the first principles humans rely on in their "striving to preserve order and coherence in the world" (Moore and Meltzoff 1999, 641). Object permanence is generally assumed to be acquired by humans in their second year of life,³ at which point infants begin to "parse multiple appearances as manifestations of a single underlying individual [...] Both classifying groups of entities and tracing the identity of individuals over time and space are effective in isolating invariants and reducing apparent multiplicity" (ibid.). The cognitive processes of parsing the world for variants and invariants are so complex that they lay the groundwork for many advanced cognitive processes we only learn much later: "Infants do not at first understand that material objects, qua objects, are permanent, but rather discover that certain transformations are ones that preserve permanence" (ibid., 642). Among the connected cognitive developments are an understanding of cause and effect as well as of the agency of others (Piaget 2013, 378).

With regard to the examples, object permanence is tangibly undermined when the player has to keep the avatar's gaze directed at an object in order to make sure that it does not disappear—exactly what we learn as infants to be unnecessary and precisely not an act imbued with agency. These spaces are ontologically multistable, changing from one spatial configuration to another, defying Euclid's assumption of spatial stability. As the identity of objects, cause and effect, and agency are apparently

3 There is some debate about the average age and the mode of attaining object permanence. Given the inevitable methodological challenges (Krøjgaard 1998) of the topic, "[i]nfant object permanence is still an enigma after four decades of research" (Moore and Meltzoff 1999, 623).

deeply connected with object permanence, the shared aesthetic of non-Euclidean game worlds comes into clear focus. Non-Euclidean games connect these factors through their spaces and undermine some of our most fundamental heuristics for meaning making, acquired in early childhood. They confront their players with environments that are not permanent, lack uniquely identifying traits, and thus make it difficult to even identify the starting position of the avatar, let alone to navigate through complex environments. Intentional movement becomes impaired, leading to a loss of agency (Sicart 2013, 104).

Conclusion

When game spaces deny players the ability to navigate them reliably by withholding immutable rules, they not only undermine one of the most fundamental aspects of the game, spatial navigation, but impede players' general ability for reasoning. Even though *Antichamber* allows its players to identify logical solutions to its spatial configuration (by thinking outside the proverbial as well as, in this case, very literal box), it introduces additional difficulty in this process by suggesting to its players that not only pre-formed behavioural patterns may not be applicable, but that the methods by which we have formed them as children (and which are the basis for all our rational thought) may no longer hold. This is, without any apparent similarity to what we would normally call a horror game, a profound unsettling that has the potential to induce sublime terror in the players—a potential fully realised in *P.T.* to horrendous effect.

In stripping us of our ability to trust in object permanence, the games discussed here do more than create a playful navigation of game spaces. They go beyond cognitive dissonance in defamiliarizing space and throw us back cognitively to a past stage in child development, robbing us of some of our most essential, most fundamental, and most relied-upon means of dealing with the world. By confronting us with spaces that withhold our primary cognitive achievement, object permanence, we are left with trial and error, the preceding phase in child development, and later on forced to do non-Euclidean mental mapping—to transcend our established navigational faculties for a heightened sense of accomplishment. So, despite their difference, both examples have a shared aesthetic: fundamental cognitive defamiliarization.

Figures

Fig. 1: Screenshot by the author (Demruth 2013).

Fig. 2–3: Graphic by the author.

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“I love how you can see the bottom of the universe from this room.”

The Real-Virtual Architecture of Davey Wreden’s *The Beginner’s Guide*

Benjamin Beil

Abstract *The Beginner’s Guide* (Everything Unlimited Ltd. 2015) is Davey Wreden’s follow-up game to the critically acclaimed *The Stanley Parable* (Galactic Café 2013). It is a collection of half-finished experimental games created by a developer named Coda. Davey Wreden guides the player through these game fragments in order to explore Coda’s personality. At first glance, *The Beginner’s Guide* is a deconstruction of game architecture: the game does not try to hide the artificiality of its scenery, it uses very basic polygon models and textures, and even exposes irregularities and glitches in its level structures. But at second glance, the role of these cracks in the fabric of the game’s fictional world seems more complex as some glitches turn out to be carefully constructed rearrangements of internal and external views of the game world. In this way, the true revelation seems to be that games are not just fictional worlds but objects in themselves—and by accentuating and embracing their nature as constructed objects, these broken fictional worlds become somewhat more real.

Keywords *The Beginner’s Guide*, indie game, authorship, real, virtual, fictional

Instead of an Introduction: The Introduction of *The Beginner's Guide*

The Beginner's Guide (Everything Unlimited Ltd. 2015) begins with a white screen and a long voice-over monologue:

Hi there, thank you very much for playing *The Beginner's Guide*. My name is Davey Wreden, I wrote *The Stanley Parable*, and while that game tells a pretty absurd story, today I'm going to tell you about a series of events that happened between 2008 and 2011. We're going to look at the games made by a friend of mine named Coda. Now these games mean a lot to me. I met Coda in early 2009 at a time when I was really struggling with some personal stuff, and his work pointed me in a very powerful direction, I found it to be a good reference point for the kinds of creative works that I wanted to make (ibid.).

The white screen fades into the a low-polygon representation of a Middle East desert town. Most players will feel reminded of a generic multiplayer shooter, even if the typical first-person gun at the bottom of the screen is missing. Some players may even realise that *The Beginner's Guide's* first level is a (slightly modified) recreation of the iconic *Counter-Strike* (Valve 2000) map *de_dust* with its layout of looped corridors and single squares (» Fig. 1).



Fig. 1 *The Beginner's Guide*, Introduction.

So, just to start you off, this is I think the first game he ever made, it's a level for *Counter-Strike*, you can walk around here by the way, and mostly it's just Coda learning the basics of building a 3D environment. But what I like is that even though he starts from the simple aesthetic of a desert town, he then scatters these colorful abstract blobs and impossible floating crates around the level, [...] (Everything Unlimited Ltd. 2015).

If the player chooses to wander around the map—which he/she does not have to do, the game continues without any input—he/she can in fact discover floating boxes or missing textures and placeholder textures in bright colours not connected to the aesthetics of the desert town theme described by Wreden (» *Fig. 2*). Are these elements part of a puzzle? The mystery surrounding the visual bugs is immediately resolved by Wreden's voice-over:



Fig. 2 *The Beginner's Guide*, Introduction.

[...] and of course, it destroys the illusion that this actually IS a desert town, and instead this level becomes a kind of calling card from its creator, a reminder that this video game was constructed by a real person. And it kind of makes you wonder: What was going through his head as he was building this? This is what I like about all of Coda's games. Not that they're all fascinating as games, but that they are all going to give us access to their creator. I want us to see past the games themselves, I want to know who this human being really is, and that's exactly what we're going to do here.

So, it's 2008, Coda starts making these games, and he never releases any of them. He doesn't put them onto the internet, he just makes them and then immediately abandons them and they sit on his computer forever. And I think he really understood this image of himself as a recluse, at one point he jokingly renamed his computer's recycling bin to 'Important Games folder.' So, you know, this was just how he worked, he tended to crank them out one after the other without even really pausing to try to understand what he had just made, until suddenly one day he just stopped. In 2011 that was it, he made his last game and then he hasn't made another one since.

And that's why I've taken this opportunity to gather all of his work together, is because I find his games powerful and interesting, and I'd like this collection to reach him to maybe encourage him to start creating again. And if the people like you who play this also happen to find his work interesting, then I'm sure it'll send that much stronger of a message of encouragement to

Coda. So, thanks for joining me on this, if you have a particular interpretation that I haven't mentioned here or if you just need to get in touch, you can email me at daveywreden@gmail.com (ibid.).

A black screen concludes the first level of *The Beginner's Guide* and the text "Loading—November 2008" leads to Coda's next prototype (which will be the subject of this essay in a moment).

Okay that's about it for introduction, let's take a look at Coda's first proper game. As each game is loading, I'll show you the date that it was completed, this first one was made in November 2008.

A Game That Does Not Want to Be Written About

The Beginner's Guide is a strange artefact. A fitting but probably inadequate description of the game is that it is a highly self-reflexive work of art by game designer Davey Wreden, the creator of the cult indie game *The Stanley Parable* (Galactic Café 2013). Just like *The Stanley Parable*, *The Beginner's Guide* revolves around one central idea: the confrontation between two different narrative instances, two narrative authorities. *The Stanley Parable* presents a dispute between the player and a voice-over narrator (who can be interpreted either as the authorial narrator or even the author). *The Beginner's Guide* (supposedly) adds another layer to this mix. The voice-over narrator, who, unlike in *The Stanley Parable*, reveals himself at the very beginning as Davey Wreden, is in a way no longer the master of the game world, but merely a middleman. The creator of the world is someone else, a game designer named Coda. *The Beginner's Guide* is therefore simultaneously more complex and simplistic than its famous predecessor. The interplay of different narrative levels becomes more obscure due to the 'double authorship.' However, the game experience itself is more straightforward and follows a linear path. In contrast to *The Stanley Parable*, *The Beginner's Guide* does not feature multiple endings; interactivity is limited to a more or less free navigation through each prototype. The player is a visitor, a spectator who is not involved in the dispute between Wreden and Coda.

The Beginner's Guide is (supposedly) easy to explain but difficult to summarise. The main motif of the game is immediately recognisable, as the description of the first level has shown. However, the whole game is episodic, each level is a different (more or less finished) game prototype. All episodes deal with similar themes, but they are very diverse in terms of aesthetics and game mechanics. Thus, *The Beginner's Guide* presents a kind of plot and even a kind of chronology because the prototypes are arranged

according to their date of creation. The narrative structure of the game, however, remains iterative at best. The confrontation between Wreden and Coda begins anew with every level, every prototype—and always remains unsolved, unfinished, just like Coda's playful experiments.

Like *The Stanley Parable*, *The Beginner's Guide* not only explains but also challenges and theorises itself as an artefact. This makes the game an almost impossible object for an academic study. Davey Wreden, in a way, already anticipates an analysis of his artwork—or as Laura Hudson puts it: "*The Beginner's Guide* is a game that doesn't want to be written about" (emphasis in the original, Hudson 2015).¹ Each motif—above all the theme of authorship—is clearly named and promptly deconstructed. Thus, the introduction to *The Beginner's Guide* is not only an introduction to the game, it is already an analysis—which is why it has been reproduced here with only minimal additions.

But what remains for a cultural studies interpretation of *The Beginner's Guide*? Basically, only a kind of 'exposure,' a look behind the dazzling voice-over debate because the game has a tendency towards dramatic exaggeration. While *The Stanley Parable* primarily relies on humorous and absurd narrative miniatures, *The Beginner's Guide* often takes itself far too seriously. This is less true for Coda, who is only present through his prototypes, but even more so for Wreden, who gradually becomes the actual protagonist (or rather antagonist) of the story as the game progresses. Wreden seems obsessed with the idea that Coda's games are "going to give us access to their creator" (Everything Unlimited Ltd. 2015). And so, he does exactly what he announces in the introduction: "I want us to see past the games themselves, I want to know who this human being really is [...]" (ibid.). However, there is of course, no Coda to be found "past the games," but only Wreden, Wreden's fight with Coda, and most of all Wreden's fight with himself.

The introduction of the game thus proves to be a false trail. At first glance, the main theme of *The Beginner's Guide* seems clear: Who is Coda? Is Coda real? Is Wreden Coda? Additionally, the debate on authorship of course immediately dominates the game. In some forums, there are even discussions about the question whether Wreden actually stole Coda's games and whether the commercial distribution of the game is legal at all. On the digital distribution platform Steam, a user named "They Call Me 'Mal'" writes in a slightly worried manner: "I hope this is fake" ("They Call Me 'Mal'" 2015)—and receives an equally profound and completely nonsensical answer from user "ed": "The game is real only in the metaphorical sense" (ibid.). "ed" refers to the creative crisis of Davey Wreden ("real Davey"), from which *The Beginner's Guide* allegedly originated: "If you read the real Davey's blog about what he was going through after the release of *The Stanley Parable*, it's pretty obvious" (ibid.).

1 Of course, many authors have proven the very opposite, cf., e.g., Backe and Thon 2019.

Admittedly, it seems clear (and not necessarily wrong) to conflate the narrator with the author. However, from a point of view of cultural studies, which declared the author dead some time ago (Barthes 1977 [1967]; Foucault 2000 [1969]), the question of authorship is boring at best and misleading at worst.² While *The Stanley Parable* succeeded in adding some interesting facets to this idea by staging the authorship dispute as an absurd interactive conflict between narrator and player, *The Beginner's Guide* pushes the debate into the non-interactive part of its narrative. *The Beginner's Guide* is highly entertaining in this respect but also completely unoriginal as it basically imitates all the postmodern narratives that led to this debate some forty years ago.³

More importantly, the focus on the question of authorship does not do justice to the game at all. For as clearly as the voice-over narrator constantly thematises Coda's motives, Wreden is also an unreliable narrator who only wants to provoke and mislead the player by constantly repeating the question of authorship: "Despite the debates, the claims and the accusations, this is a question that *The Beginner's Guide* has absolutely no interest in" (Martin 2015). The authorship debate is a red herring, a joke that Wreden restages with every episode and every prototype.

However, while the apparent conflict between Wreden and Coda becomes increasingly grotesque as the game progresses, *The Beginner's Guide* also turns out to be a game of quieter and more subtle arguments beyond its loud voice-over debate. This is particularly evident in the game's unconventional level architecture, which deals with the question of work and author in a different way. Referring to the apparent errors in the level architecture of the said *Counter-Strike* map, Wreden argues that the level is "a calling card from his creator, a reminder that this video game was constructed" (Everything Unlimited Ltd. 2015). In this way, the question is no longer: Is Coda real? But rather: Is the game real? *The Beginner's Guide* returns to this question several times. At first glance, the game simply presents a deconstruction of game architecture. The different prototypes do not try to hide the artificiality of their sceneries, they use very basic polygon models and textures, and Wreden's voice-over even exposes irregularities and glitches. However, at second glance, the role of these cracks in the fabric of the game's fictional world seem more complex with some glitches turning out to be carefully constructed rearrangements allowing a new angle, a new perspective on this fragmental world.

2 It should be noted that this concerns the question of how and in what form the author appears in the text. The paratextual status of some game designers—e.g. Shigeru Miyamoto or Hideo Kojima—as auteurs or stars is a different debate (Aarseth 2005; Demirbaş 2008).

3 The most obvious source of inspiration might have been *Adaptation* (D: Spike Jonze, US 2002), a self-reflexive film written by Charlie Kaufmann (the writer of the self-reflexive film *Being John Malkovich*, D: Spike Jonze, US 1999). *Adaptation* tells the story of a screenwriter (named Charlie Kaufmann) who is trying (and, of course, failing) to adapt the book *The Orchid Thief* (1998). The player of *The Beginner's Guide* can even find a version of *The Orchid Thief* on a bookshelf in the 10th Chapter of the game.

Due to the episodic structure of the game, it proves problematic (and tedious) to consider all the different variations of these self-reflexive level architectures in this short essay, which is why only one more example will be discussed: *Escape from Whisper*, the second level of the game, which follows directly after the introduction. As before, the analysis consists only of a slightly extended retelling of the game events, because, again, there is little to add to Wreden's descriptions and interpretations.

The Bottom of the Universe

The black screen, which ends the introduction of the game, leads to a white, brightly lit room with a door that leads to a dark hallway (» *Fig. 3*). As soon as the player enters this area, the sound of an alarm siren can be heard. A female voice warns the player over loudspeakers: "Whisper Machine active. Ship destruction imminent." Several displays on the walls communicate the same message with the addition: "Evacuate immediately." In contrast to the *Counter-Strike* map, there is no clear reference for the level architecture in this sequence, but the generic corridors of a space station might nevertheless seem quite familiar to most players. Like all levels of the game, *Escape from Whisper* is presented from a first-person perspective, and this time, the game prototype even features a gun that can be fired—even if there are no targets in this level.



Fig. 3 *The Beginner's Guide*, *Escape From Whisper*.

The player can move freely through the corridors of the space station. A few seconds after entering the space station, Wreden's voice-over commentary sets in:

This game is called 'Escape from Whisper,' and it's one of the more generic games you'll see from Coda. It kind of looks like this game was abandoned

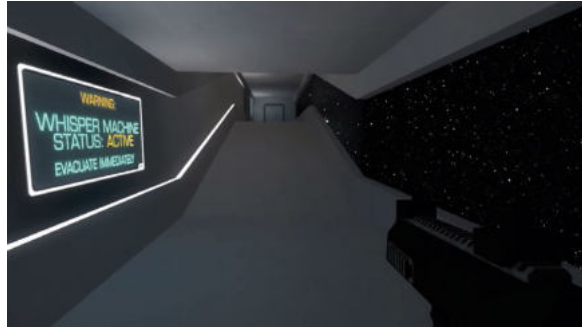


Fig. 4 and 5 *The Beginner's Guide*, *Escape From Whisper*.

mid-development. For instance, you have this gun which you'd think would indicate that there are supposed to be monsters or enemies somewhere, but then clearly there are no enemies anywhere. You can't even reload the gun when you run out of bullets. But ultimately, we don't really know, maybe Coda thought that actually it was complete the way that it is, and I think we should talk about his games for what they are rather than for what they're not (Everything Unlimited Ltd. 2015).

Another difference to the *Counter-Strike* level is that the player cannot remain completely inactive this time. To advance the storyline and trigger Wreden's next voice-over comment, certain points on the space station must be reached. At first sight, the space station seems bigger and more complex than it is because most of the junctions are dead ends and most doors are closed—there is only one linear path.

After a few minutes, the player reaches a corridor with a large window (» Fig. 4). The view into the exterior shows not only stars surrounding the space station but also a (supposed) error in the level architecture. At the bottom of the skybox that encloses the level, texture is missing. Instead of stars and blackness of outer space, a surface

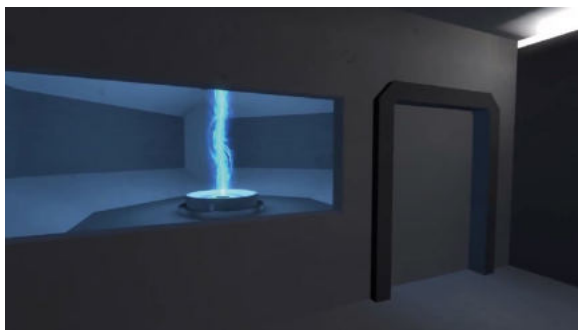


Fig. 6 *The Beginner's Guide*, Escape From Whisper.

coloured in dark grey is seen (» *Fig. 5*).⁴ Wreden comments this view with a remarkable statement: "I love how you can see the bottom of the universe from this room" (Everything Unlimited Ltd. 2015).

The door at the end of the corridor leads to a labyrinth.⁵ Like the previous weapon implying a gameplay challenge but turning out to be pointless after all, the player's expectations are disappointed once more. Wreden reacts as follows: "Apparently, this space station has a labyrinth on it! I—heh, sure, I dunno. There's really no reason for it that I've ever been able to discern so in the interest of time I'm just going to skip you on past it" (Everything Unlimited Ltd. 2015). Shortly after entering the labyrinth, the player is teleported to the end of it. He/she then enters a room in which a ray of light can be seen through a window: the Whisper Machine (» *Fig. 6*). Wreden's voice comments: "Okay, this is the part that's interesting. The game has this narrative about the Whisper Machine and how it has to be turned off, and then you get to the engine room" (ibid.).

His voice-over stops briefly so that the player can listen to the instructions of the female voice from the alarm announcement at the beginning of the level. The voice now speaks directly to the player:

Hey, you there, in the engine room. You could save us all! That beam is powering the Whisper Machine. We could disrupt it by introducing a great enough heat signature. If you ... your body could stop the beam. It's so much to ask, but for all of our lives, would you do it? Could you give yourself? (ibid.)

4 For a deeper study on the skybox principle, see Bonner's chapter in this book.

5 For a critical investigation of the role of the labyrinth in the digital game world, see Nohr's chapter in this book; for a corridor as a spatial feature and its usage as a trope and spatial puzzle, see Backe's chapter in this book.

After the weapon and the labyrinth, this third game mechanic, a meaningful moral decision, turns out to be a fake as well. If the player refuses to enter the beam for a while, Wreden intervenes: “This is not a branching point unfortunately; the only option is to step into the beam” (ibid.). The ‘branching point’ of the level is rather a different one. When the player enters the beam, the first-person camera tilts to the side and falls to the ground. However, the death of the player character is not the end of Wreden’s guided tour through the Escape from Whisper level.

Lemme pause here for a second. What you just experienced, stepping into the beam and then dying, is probably what Coda had initially intended when he was developing this level. But when he first compiles and plays it, something goes wrong, there’s a bug somewhere, and this is what happens instead (ibid.).

The game is reset, and the player must enter the beam again. But instead of a death animation, this time the avatar suddenly begins to float and passes through the ceiling of the engine room. The view from outside shows that the space station is not a space station at all but a chain of rooms and corridors, surrounded by a skybox without floor texture (» *Fig. 7*).



Fig. 7 *The Beginner’s Guide*, Escape From Whisper.

The beam causes you to start floating. And this is an important moment for him. Because yes, this is technically a glitch, but Coda identifies something human about it, like how small it makes you feel in the face of this larger chaotic system, or this floating could be the afterlife, a peaceful place juxtaposed against all the hysteria you’ve just had to traverse. I don’t even know, I have no idea what he was thinking, but what’s clear is that after making this, something lodges itself in his brain, he wants to do more of these really weird and experimental designs. So, he stops work on this and moves onto a stream of tiny little games that go in all sorts of directions (Everything Unlimited Ltd. 2015).

With these words and the view from outside, *Escape from Whisper* ends. Again, a description of this sequence proves to be difficult since the self-reflexive voice-over commentary interferes with the quite complex representation of the level architecture and its carefully arranged errors and gaps.

Although the missing skybox texture ("the bottom of the universe") and the concluding view of the space station from the outside are ultimately only cracks in the illusionistic surface of the level architecture, it is nevertheless noticeable that these errors are much more elaborately staged than in the *Counter-Strike* level. Wreden, again, anticipates a first interpretation of these cracks in his voice-over. He asks if *Escape from Whisper* is perhaps simply an unfinished game—"It kind of looks like this game was abandoned mid-development" (ibid.)—but then emphasises that these errors are part of the game and even define the game: "I think we should talk about his games for what they are, rather than for what they're not" (ibid.). This approach also shapes his following voice-over remark. When Wreden points out the missing skybox texture to the player, he says: "I love how you can see the bottom of the universe from this room." Of course, this may work as a funny remark, but Wreden's choice of words seems quite significant. Why does he say universe, when he could say game or level?

Getting to the Bottom (of the Bottom of the Universe)

For a closer look at Wreden's interesting choice of words, the analysis must go one step back, namely to the question of how voice-over and game world relate to each other. A first approach might be to assume Wreden's voice-over simply as a kind of audio commentary, as it is sometimes found as an additional audio track on DVD or Blu-ray release of movies but also (though very rarely) in the field of video games. The *Half-Life 2* episodes (Valve 2006/2007) or the *Portal* games (Valve 2007/2011) for instance offer an alternative game mode in which floating speech bubbles can be found in the game world. When the player clicks on these bubbles, short anecdotes from the development team can be heard, usually corresponding to the section of the game the player is crossing. In these and other examples, the audio commentary is always an alternative mode, an additional layer that is placed over the (fictional) game world. In the case of *The Beginner's Guide*, however, 'the game' and 'its commentary' are entangled intimately. There is no game without the voice-over, at least not a playable one.

Another approach would be to consider Wreden's presentation of Coda's games as a form of remediation (Bolter and Grusin 1999), a game within a game. It is not a new phenomenon that games are able to integrate different media into their game worlds,

and that this integration can be more or less self-reflexive.⁶ The game world of *Grand Theft Auto V* (Rockstar North 2013) for instance contains a number of other types of media: books, paintings, (car) radios, television sets, and smartphones. In some moments, *Grand Theft Auto V* also goes one step further when the game not only recreates an audio-visual style of another medium, but tries to emulate a certain media-practice, like going to the movies, or doing street photography (PetaPixel 2013). However, even if a video game integrates another video game into its game world, it does not automatically break the fourth wall. Jesper Juul calls these games-inside-games “staged games” (2005, 132), “a special case where an abstract or somewhat representational game is played in a more elaborate world” (ibid.). The player of *Grand Theft Auto V* can play the video game *QUB3D*, a kind of 3D *Tetris*, at an arcade machine in the game world. Other examples are playing *Maniac Mansion* (Lucasfilm Games 1987) in *Day of the Tentacle* (LucasArts 1993) or *Lost Vikings* (Silicon & Synapse 1993) in *StarCraft II: Wings of Liberty* (Blizzard Entertainment 2010). However, Juul’s definition of staged games does not seem to apply to Coda’s games in *The Beginner’s Guide*. Coda’s prototypes are not games “played in a more elaborate world,” they are the world.

Both explanatory attempts thus prove to be insufficient. In the case of the audio commentary, Wreden’s voice-over and Coda’s games would be clearly separated; in the case of staged games and other intermedial interlacing, there would be no clear separation but a clear hierarchy between the two layers. Yet, *The Beginner’s Guide* seems to be all about blurring these distinctions and hierarchies. Errors in the architecture of the game world do not work as a disruption. Missing textures and clipping errors become a form of artistic expression—“what once stood in the way of media transparency as a distortion of perception now becomes an aesthetic strategy” (Rautzenberg 2009, 236).

A third approach is therefore to consider Coda’s prototypes not as games-within-games, but as worlds-within-worlds. On the topic of metareferentiality, Hans-Joachim Backe takes a closer look at pictures (paintings, photographs, posters) in the game worlds of *Dishonored 2* (Arkane Studios 2016) and *Prey* (Arkane Studios 2017) in his essay *Metareferentiality Through In-game Images in Immersive Simulation Games* (2018). Both games transport the player into interlaced story worlds, contain mise-en-abyme structures und metalepses (Harpold 2007). Within their ‘primary’ worlds there are other ‘secondary’ worlds to be found that are explained by magic (*Dishonored 2*) or some kind of holodeck technology (*Prey*).

Unfortunately, this is not the place to examine Backe’s highly interesting approach in detail. Only the (very shortened) conclusion of his text will be discussed, where he argues that *Dishonored 2* and *Prey* use worlds-within-worlds structures as a strategy of

6 Gundolf S. Freyermuth has coined the term “intensive transmediality” (2014, 141–42) for this form of integration. On this topic, cf. also Ewan Kirkland’s brilliant essay on *Resident Evil’s Typewriter* (2009).

artistic expression. Especially *Prey*, which interlaces its game worlds several times, is of interest here:

Prey [...] exposes the fakeness of its virtual world, only to affirm the authenticity of the reactions it elicits. [The game] foregrounds and defamiliarizes its own audio-visual representation, going so far as to negate the relevance and reality of all its events. [...] The player is aware that everything is just a game, or a game within a game, or a game within a game within a game (emphasis in the original, Backe 2018, 9–10).

In *Prey*, the realisation that some game worlds are not 'real' but only simulations (with-in simulations within simulations ...) does not lead to a break within the narrative illusion of the game. Rather, the interlacing of different virtual worlds proves to be the main narrative motif of *Prey*.

[T]he game's metacommentary does not result from breaking the fourth wall. Instead, it reveals the layers of its mise-en-abyme structure of nested simulated environments until, in the end, it arrives at what appears the 'actual' or outermost layer. It is through the provocation of declaring all actions in the game non-actual that the attentive player is prompted to reflect upon the general 'actuality' of in-game actions, and to realize that *Prey* problematizes what it means for something in a game to be real, virtual, or fictional (emphasis in the original, *ibid.*, 9).

With this final trisection, Backe refers to an essay by Espen Aarseth with the telling title *Doors and Perception: Fiction vs. Simulation in Games*, in which he argues that "there are at least three different ontological layers to game content: the real, the virtual and the fictional" (2007, 3). His examples are dragons, labyrinths, and doors, or more precisely different doors in *Return to Castle Wolfenstein* (Gray Matter Interactive 2001):

Most of the doors [in *Return to Castle Wolfenstein*] are merely textures on the walls that look like doors, but whose function is purely decorative. Other doors actually do behave in a door-like manner; they can be opened, closed, seen through, walked through and fired through (*ibid.*).

The first type of doors is fictional, the second type is virtual, because it is

a dynamic model that will specify its behavior and respond to our input. It is this model behavior that makes it different from a fiction, since we can get to

know the simulation much more intimately that we come to know the fiction (ibid., 1).⁷

This vocabulary now allows a more elaborate description of the final sequence of the Escape from Whisper level:

- First, the game contains a number of fictional elements (the science-fiction setting);
- Secondly, there are virtual elements (doors that can be opened, a useless gun);
- Third, the level contains a labyrinth that is both virtual and real, virtual in a physical sense, but real in a conceptual sense (because it is a rule-based game). It may seem ironic that Wreden forces the player to skip the labyrinth, the ‘game-part’ of the prototype;
- Fourth, the bird’s eye view at the end of the level seems to go beyond the three categories “real,” “virtual,” and “fictional.”

The view of the space station from outside is a glitch and no glitch at the same time. It accentuates or rather embraces the game and its world as a constructed object. In a way, it somewhat pushes it from the “virtual” towards the “real”—even if it never reaches the “real,” of course. Such an interpretation is certainly worth debating, but it provides an explanation as to why the end of the level is not simply perceived as a technical error, as a breach of the narrative illusion. Most players will be familiar with a view where an avatar suddenly falls through the game world or floats over the world due to a clipping error. On the one hand, these views are simply to be seen as errors in the game engine, but on the other hand, they have since developed an aesthetic life of their own (Bainbridge and Bainbridge 2007; Berry and Dieter 2015).⁸ *The Beginner’s Guide* tries to integrate these glitch aesthetics into its fiction—or perhaps it is the other way around. Thus, the game becomes a self-reflexive and poetic study of its own virtuality or rather the virtuality of its objects.

This fakery is not in service of a trick, however; it is the thing itself. Wreden uses his lies, his deceit, his hoaxes and his misdirections in service of a kind of truth. [...] It doesn’t matter if they were made by Wreden or Coda, these

7 This vocabulary appears to be comparable to a “second-order model” described by Rune Klevjer in his phenomenological approach: “Real-time virtual objects are second-order models—visual models of algorithmic models—that appear in experience as first-order concrete models of the quasi-physical kind. Such virtual objects are, at once, algorithmic entities and tangible objects” (Klevjer 2019, 732).

8 For an artistic research approach on such out-of-bounds perspectives and situations, see Hawranke’s chapter in this book.

games are objects in themselves, each with both an internal reality—their systems and rules—and an external reality—their nature as constructed objects, modes of expression, and ultimately, games. This is the true revelation of *The Beginner's Guide* (Martin 2015).

In this way, *The Beginner's Guide* can perhaps best be described as a museum. Not simply as a virtual museum however, since Coda's games are not ordinary exhibition objects.⁹ *The Beginner's Guide* is rather an *ironic museum* (Bann 1978), a museum that reveals itself as constructed and assembled. The ironic museum realises an equal coexistence of different presentation and interpretation layers. *The Beginner's Guide* allows its exhibition objects to oscillate constantly between the real, the virtual, and the fictional—and, incidentally, shows that video games are an expressive medium. It is not without a certain irony that in this case Davey Wreden is indeed not an author but rather a curator, which seems to be a new interesting role in the fields of game design and game studies.

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Fig. 1–7: Screenshots by the author, Everything Unlimited Ltd. 2015

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The World Machine

Self-Reflexive Worldbuilding in *OneShot*

Theresa Krampe

Abstract Worldbuilding in video games is typically associated with the creation of immersive virtual environments. In the independent puzzle adventure *OneShot* (Little Cat Feet 2016), however, worldbuilding becomes the game's central theme in a highly self-referential manner. *OneShot* presents a multilayered universe in which not only characters and players but the game's very code seem to move freely between ontological levels. Drawing attention to the aesthetics and mechanics of worldbuilding and deconstructing the architecture of its own game world, *OneShot* invites reflection on the relation between fiction and computation; the virtual and the actual.

Keywords Worldbuilding, video games, self-reflexivity, metalepsis, immersion

Introduction

Imaginative worldbuilding, researchers from the cognitive sciences to transmedia narratology agree, is an activity that comes naturally to us as human beings and helps us to make sense of the 'real world' (see Holland 2009; Wolf 2012; Ryan 2015a). We engage with the fictional worlds presented to us in various media or construct our own imaginary worlds because we take pleasure in the experience of being transported to a different reality. With the rise of cognitive narratology, engagement with fictional worlds has also been linked to empathic growth, attitude change, and improved theory of mind (Mar and Oatley 2008; Kidd and Castano 2013; Nünning 2014; Fitzgerald and Green 2017).

While an increase in the popularity of worldbuilding can currently be observed across media (see Wolf 2012), video games seem to find themselves in a privileged position when it comes to creating elaborate simulated environments that the player can enter. Their interactive qualities allow almost direct access to the objects and individuals populating game space. Technological affordances such as detailed designs

of 3D geographies, responsiveness to user input, motion capturing, and photo-realistic graphics further contribute to an experience that nips at the heels of transparent immediacy (Bolter and Grusin 2000, 21–24). Almost paradoxically, these in-game environments are at once thoroughly mediated and profoundly spatial. They are the product of a complex informatic architecture—most of which remains invisible to the player—and yet, they are experienced as habitable worlds in an almost physical sense. As Marie-Laure Ryan writes in her 2016 co-authored monograph *Narrating Space/Spatializing Narrative*: “[W]e have developed the habit of thinking of computers as machines that take us into a separate reality—a domain conceived in terms of spatial metaphors” (Ryan et al. 2016, 101). The game’s landscapes and textures, its objects and inhabitants, and the affordances to explore and interact with the world all contribute to creating a “sense of place that binds players to virtual worlds” (ibid., 114).

This chapter approaches the question of video games as world phenomena and the player’s sense of immersion through the analysis of *OneShot* (Little Cat Feet 2016), an independent video game that self-consciously exposes its own underlying mechanisms of narrative and ludic worldbuilding. *OneShot* can be described as a top-down puzzle adventure game. Originally developed in 2014 as freeware using RPG Maker 2003, the game was expanded and republished on Steam in 2016. *OneShot*’s story follows Niko, a child lost in an unfamiliar world, on their¹ quest to restore the world’s “sun”—a lightbulb—to its original location at the top of a tower in the centre of the world. Gameplay mainly consists of solving puzzles with the help of characters, items, or the environment. Some puzzles, and this is the truly noteworthy feature of *OneShot*’s gameplay, even go beyond the game window: they require the player’s engagement with not only the game’s diegetic world but also with parts of the game’s informatic architecture that lie outside the story world, such as the content stored in the computer’s filesystem.

In the following, I first introduce a theoretical framework for understanding the game world of *OneShot*. Inspired by possible worlds theory as well as by cognitive approaches to immersion, this frame seems particularly promising for a discussion of the complex levels of embedding and metaleptic transgression characteristic of my case study. Subsequently, the worldbuilding strategies employed in the game are addressed in more detail, focussing on the ways in which *OneShot* draws attention not only to its strategies for constructing a fictional game world but also to the architecture of its structural layer: its mechanics, data files, and the spatial metaphors of the computer’s user interfaces.

1 Since Niko is never gendered in the game, I will refer to them using the pronoun singular ‘they’.

Worldbuilding and Immersion in Video Games

In video games, even more than in other media, worldbuilding is associated with the ideal of full-body immersion and the creation of virtual environments that players can enter. For the video game industry and its target audience, immersion has also become something of a catchword, advertising a particularly engaging and pleasurable gaming experience. When it comes to systematic scientific description, however, immersion has remained notoriously elusive, and theories are scattered across disciplinary traditions. Various understood as an experience, a mental process, or a phenomenon arising from the interaction between artefact and recipient, immersion is associated with feelings of intense concentration and the loss of awareness of one's (actual) physical surroundings when engaging with an imaginary world (Murray 1997; Gerrig 1999; Ermi and Mäyrä 2005; Ryan 2015a).

Expanding on the idea of immersion as movement from one world to another, Marie-Laure Ryan speaks of the recipient's "fictional recentering" into a possible world: a typically fictional alternate universe that consists of a habitable environment with objects, individuals, and events (2015a, 63). Imaginary worlds typically deviate in interesting ways from the actual world, but these creative inventions are not random. Even fantastic worlds must remain plausible and stick to a coherent internal logic if they are to remain believable (Wolf 2012, 33–43). While engaged in immersive gameplay (or reading/viewing), the fictional world may become the player's (reader's/viewer's) primary frame of reference, so that she experiences it as actual while in it (Ryan 2015a, 73).

OneShot introduces its world through the perspective of its protagonist Niko, a child who one day wakes up in a strange bed in an even stranger world, only to learn that they are supposed to be its saviour. Initially, the player and Niko share a level of knowledge about the world—or rather a lack thereof—and thus a sense of strangeness and disorientation. This provides an ideal set-up for a slow discovery of the game world and its internal logics; in particular those differing from the actual world. Niko's unexpected transportation from their home into the game world even mirrors the player's recentering from the actual world into the fictional world of the game.

Niko serves as the player-character in the sense that they can be controlled by the player, but the game emphasises their status as a fictional being rather than a mere projection of the player's agency in the game world (on player characters, see Vella 2016, 80 et passim). The player's agency as such extends over several ontological levels in the game. Firstly, players can explore and interact with the two-dimensional geography of the fictional world inside the game through Niko. However, rather than being embodied in Niko as an avatar figure, the player is positioned as the world's God, a being speaking and acting from a higher level onto the fictional world, and who provides divine guidance for the hero on their quest. Secondly, as we shall see in a later part of this chapter, the game foregrounds the player's access to the architecture of the game

itself, i.e. to the components and processes of the computational level that make the game playable in the first place.

OneShot's emphasis on the distinction between player and protagonist echoes the idea of characters as 'possible individuals' that is put forward in narratological and cognitive accounts of worldbuilding (e.g. Vella 2016, 80 with reference to Margolin 1990). Using the concept of mental simulation, Ryan explains how recipients construct mental models of the fictional world they encounter from cues provided by a text or artefact as well as their real-world knowledge. Following this idea, we can assume that players, too, construct mental models of the settings, events, and characters they encounter in the game. These models can be imagined as dynamic simulations of a fictional world, which aid the comprehension of its internal logics, of the progression of its narrative, and help players keep track of the overall state of the world (Ryan 2015a, 79). From their quality as mental simulations, it follows that the world and its inhabitants are imagined to exist independently of the signs (words, sounds, images) that produce them (ibid., 62–63). Readers or players, though remaining aware of its fictionality, perceive the game world much like an actual, geographical space and may even be able to imaginatively place themselves in the characters' minds, sharing their point of view, thoughts, and emotions (e.g. Zunshine 2006; Kidd and Castano 2013; Nünning 2014). *OneShot* supports such an understanding by explicitly portraying Niko as a character with a mind of their own and even a life beyond the game world in which they are controlled by the player.

So far, I have largely equated the concept of the game world with a fictional world that happens to be inside a game. This warrants some qualification. As Sebastian Domsch (2013) and others have rightfully pointed out, game worlds are not identical with the fictional worlds we find in, say, a novel. Emerging from the interplay of multiple components, including interactive gameplay, narrative script, mechanics, algorithms, and audiovisual rendering, game worlds differ from more 'conventionalised' subcreations in at least three crucial ways.

Firstly, game worlds are rule-based. Players' mental models must therefore encompass both the story world and the game as simulated physical environment based on algorithms and mathematical rules (cf. Nitsche 2008, 8; cf. Buselle and Bilandzic 2017, 19). The ways in which the story world differs from the recipient's actual-world context are defined by textual rules. Within the world of *OneShot*, for instance, it is a fact that robots are powered by jars filled with glowing shrimp, and may obtain consciousness. Genre conventions may contribute further rules and specifications. *OneShot's* main narrative arc follows an archetypal quest plot revolving around a hero's obstacle-ridden journey towards a goal. Guided by the player, the protagonist Niko is tasked to restore the world's sun to its original position at the very centre of the map. Coded rules, by contrast, determine the affordances and limitations of the player's ludic interaction with the game. In *OneShot*, the environment itself, or rather Niko's competencies

vis-à-vis the rules that govern the gameworld, typically pose the main ludic challenges. Niko can, for instance, move in horizontal and vertical directions, but they cannot cross squares representing water or chasms. Often, these rules are also endowed with narrative meaning, for example that Niko—unlike some of the NPCs—cannot swim or fly (see also Domsch 2013, 18–22). As productive constraints, coded rules enable the creation of spatial puzzles such as labyrinths, mazes, or problem-solving challenges such as finding and repairing a boat in which Niko can cross the water.

Secondly, since game worlds are typically responsive to player input, the player must consider previous decisions and outcomes as well as the affordances still available to them (Caracciolo 2014, 20, 161). Monitoring the state of an interactive game world thus requires the construction of a second, dynamic set of models that need to be continually updated and may differ significantly across playthroughs. Activities such as strategising may also constitute forms of interactive engagement with the world even when players are not actively providing input (Calleja 2011, 41–42).

Thirdly, following Espen Aarseth (2001; 2019), worldbuilding in games is first and foremost concerned with the representation, implementation, and negotiation of space.² Especially when achieving embodied presence in the game world by means of an avatar figure, players can experience the orientation of their body in space almost as if they were dealing with the actual world (Calleja 2011, 75). Unlike the passive observation of movement through space in non-interactive film, motion in video games is experienced as navigation, and objects and environments may respond to the presence and actions of the player (cf. Günzel 2008, 171–72, 180–81). Rather than merely encountering space as representation, players can inhabit the game space and experience a sense of ‘being there,’ or presence. Engaged players will start to build cognitive maps of their surroundings, which include recognisable routes and landmarks, or the location of relevant objects and NPCs. As the geography of the game world becomes increasingly familiar, “a sense of comfort and belonging settles in, creating an attachment between player and game environment” (Calleja 2011, 87), which is in turn conducive to player immersion.

To sum up, worldbuilding in games, for the purposes of this chapter, refers to the interaction between visual, aural, verbal, ludic, and mechanical cues and the cognitive activities of the player, all of which contribute to the illusion of a coherent fictional world. Typically, the (re-)presentation of the world is to some extent shaped by the player’s behaviour and it dynamically reacts to her decisions. Closely related to worldbuilding is the concept of immersion: the state of feeling transported into such a game world.

2 See also Marc Bonner’s chapter in this anthology.

The (Im)Possible Worlds of *OneShot*

As already indicated above, worldbuilding in fiction can be visualised using Ryan's adaptation of possible worlds theory. A (hypothetical) real world is surrounded by possible worlds: the non-actual but somehow conceivable worlds of dreams, desires, and stories. Engaging with the story world of a game, the player may recentre from her individual version of the actual world into the possible world of the game. While immersed, players experience the game world 'as if' it were actual. The game world, in turn, is surrounded by the possible worlds of the characters' dreams, desires, or stories, making it possible to create complex multilayered worlds without disrupting immersion (Ryan 2015a, 70–75). In *OneShot*, however, the coexistence of parallel worlds, the presence of multiple layers of embedding and the complex entanglement of ontological levels within a single work (see Ryan 2015b, 22) entail a number of logical problems that Ryan (2013) identifies as characteristic of impossible worlds. The most prominent among them are contradiction and ontological impossibility. In video games, contradiction may occur as soon as a game is played more than once since details of the world may differ from playthrough to playthrough. Typically, this is ignored by both player and game for the sake of immersion in the individual playthrough. *OneShot*, by contrast, explicitly engages with the possibility of coexisting versions of the same world.

Once we unravel its complexly layered levels of embedding, *OneShot's* universe can be said to consist mainly of "the World," referring to the world in which Niko and the player find themselves at the beginning of the game. "The World" is populated by regular "NPCs [whose] memories do not last beyond the scope of a session" (*OneShot: Solstice*, Little Cat Feet 2017). All versions of "the World" are embedded in an overarching frame narrative situated on a higher ontological level, on which the mysterious Author is identified as the creator of "the World." In records left by the (fictional) Author in "the World," information on his implementation of the 'multiverse theory' can be found. According to his notes, alternate versions of "the World" are created according to the laws of probability, like "the rolling of dice" (author's journal p. 6; *OneShot*). Some characters seemingly exist across levels: they appear in the embedded world but are aware of its iterability, as well as of the fact that it is embedded in a frame world. Addressing the fact that a game can be played more than once, and that the game world differs across playthroughs, *OneShot* ironically subverts its own premise: "you only have one shot."

The digital nature of "the World" is made even more explicit in the *Solstice* DLC chapter, which adds highly self-reflexive content to new game plus versions of *OneShot*. Not only do specific characters now indicate awareness of the fact that the player has "successfully bypassed the 'one shot' restriction" to play the game again, but they even seem conscious of the technological, narrative, and cognitive processes of

worldbuilding involved in order for “the World” to come into existence in the first place. As Prototype, a character in *OneShot: Solstice*, explains:

Prototype: [“The World”] doesn’t really exist unless Theresa³ initiates the program.

Niko: The... program?

Prototype: The World Machine. A Universe Simulator that runs on Theresa’s computer. We are all in it right now.

Niko: SO WE ARE NOT REAL?

[...]

Prototype: Think of it like... one of your dreams. When you wake up it’s gone. But unlike a dream, this world has a physical location inside a computer, which Theresa operates. (*OneShot: Solstice* 2017)

OneShot self-reflexively frames its own game world as a simulation on a computer and thus draws attention to its mediatedness. The game’s very premise, it seems, is to formulate an allegory of worldbuilding in digital media. Prototype’s explanation even chimes with recent cognitive theories of player engagement with the game world. The “World Machine” cannot be “run independently” but “requires the mental processing abilities of a real person from another universe” to conjure up an immersive secondary world.

The complexly layered multiverse structure of *OneShot*’s game world sets the stage for yet another logical problem: the transgression of world boundaries by way of metalepsis. A form of ontological impossibility, metalepsis describes the paradoxical movement from one ontological plane to another. This can take the form of the physical movement of characters from one world to another on a higher or lower level of narrative embedding (ontological metalepsis), or of characters displaying awareness of these different worlds and/or speaking across their boundaries (epistemological metalepsis) (e.g. Nelles 1992, 94; Kukkonen 2011, 1–2). Prototype’s explanation above can thus be conceptualised as epistemological metalepsis, whereas Niko’s relocation to “the World” is a case of ontological metalepsis. Even the player herself metaleptically transgresses the boundary between the actual and the fictional to achieve presence in the game world as its deity. Niko, as well as a few NPCs, are aware of the player’s presence and the control she exerts over the game world. At times, Niko will also directly address the player, asking her for guidance or comfort.

3 The game automatically uses the computer’s default username to address the player.

While metalepsis can draw the player further into the game world, aid with construction of mental models and thus increase immersion (Klimek 2009, 183–84),⁴ its perhaps more frequent functions are associated with self-reflexivity. In this sense, the game's direct address of the player and blurring of ontological boundaries becomes the vehicle for a metacommentary on game design and encourages reflection on the ontological status of game worlds more generally. The use of the metaphor of divine guidance, as a case in point, can also be read to problematise the player's God-like position in, and power over, the worlds of video games. Furthermore, the fact that the game makes the fictionality of its world explicit threatens to disrupt the aesthetic illusion of being immersed in a secondary world. Niko, when made aware of the fact that the world of *OneShot* is simulated by a computer, expresses a sense of betrayal and even despair: "What am I even supposed to save if everything is just... FAKE?! [...] [to the player:] Why do you keep bringing me back [to "the World"]? Theresa... aren't you supposed to be a kind god?" (*OneShot: Solstice* 2017). Implicitly, the game here invokes commonly held reservations against video gaming, such as the player's 'naive trust' and escapist attitude entailed in immersion, or the seemingly futile and unproductive activity of play. However, it also poses much more uncomfortable questions related to the moral implications of the player's emotional experience, who, after all, derives sufficient aesthetic pleasure from the suffering of a vulnerable character to "keep bringing [them] back" (*ibid.*).⁵ To stretch the interpretation even further, this passage by extension alludes to a form of existential angst often associated with metalepsis, namely the suspicion that in a potentially infinite succession of embedded worlds, our actual world may be just another 'fake.'

Breaking the Frame: Self-Reflexive Worldbuilding

In *OneShot*, metaleptic transgression is not limited to the level of the story world but also involves the game interface and its mechanics. When immersed in a game world, players typically focus their attention on the mediated plane of the fictional world and its landscapes, objects, characters, or events. The code level, by contrast, remains "hidden unless it jumps into the foreground and causes unexpected behavior" (Nitsche

- 4 In *OneShot*, for example, the possibility of direct and seemingly unmediated communication facilitates moments of bonding between player and protagonist, and make Niko seem more real than the average fictional character. Their innocence and dependence on the player further help to experience Niko as an individual, rather than a string of code. Players, who are after all in control of Niko's movements and decisions, may feel a heightened sense of responsibility and emotional attachment towards this character.
- 5 Fritz Breithaupt uses the term "empathic sadism" to describe this 'dark side' of narrative engagement (2015, 441–444).

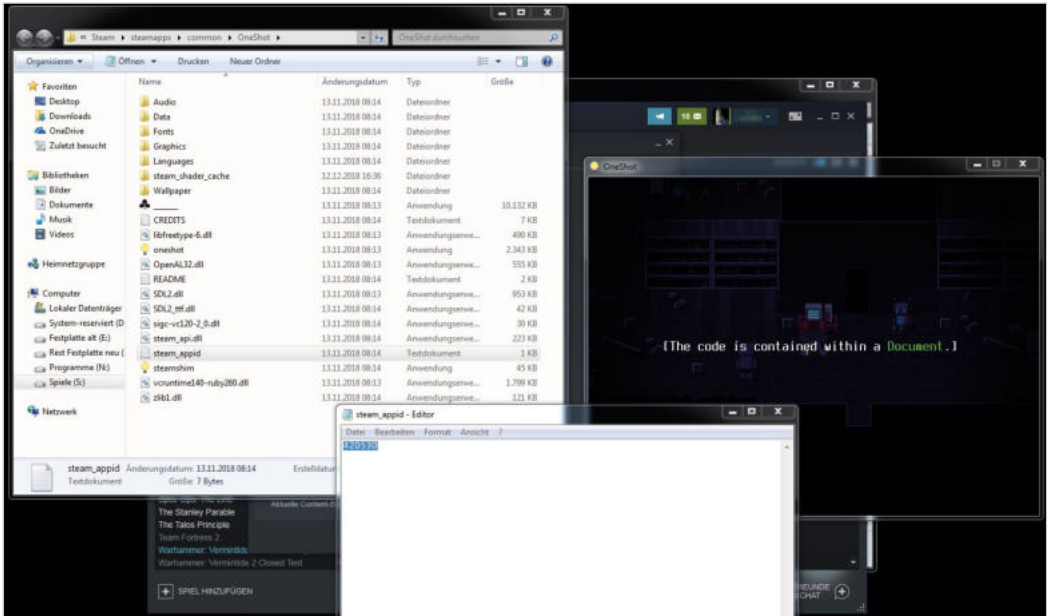


Fig. 1 Looking for clues in the documents folder of the actual computer interface system.

2008, 26). *OneShot*, however, brings the latter to the fore, flaunting its own game-ness and addressing the player in her hybrid role as presence in the game world but also the operator of a computer.

As Niko's and Prototype's remarks referenced in the previous section already suggested, the game emphasises the materiality and situatedness of the game world as a digital simulation which has "a physical location inside a computer" (*OneShot: Solstice* 2017). This motif is accentuated by means of gameplay elements reaching beyond the game's story world and puzzles that can only be solved by interacting with both the fictional game world and the interface of the actual computer. The password for the in-game computer can for instance be found in a document hidden among *OneShot's* 'regular' game files (» Fig. 1).

In a particularly striking example near the end of the game, players are asked to help Niko to navigate a labyrinth consisting of rooms and doors. While, prior to this scene, the game space had been presented as continuous, this labyrinth is shown frame by frame. Rather than corresponding to the logics of geographical space, it follows the computational logic of text-based adventure games in which space becomes a network of nodes or rooms connected by links (cf. Fernández-Vara 2007, 75–76). Directions such as left/right or north/south become meaningless: if Niko enters a door to the

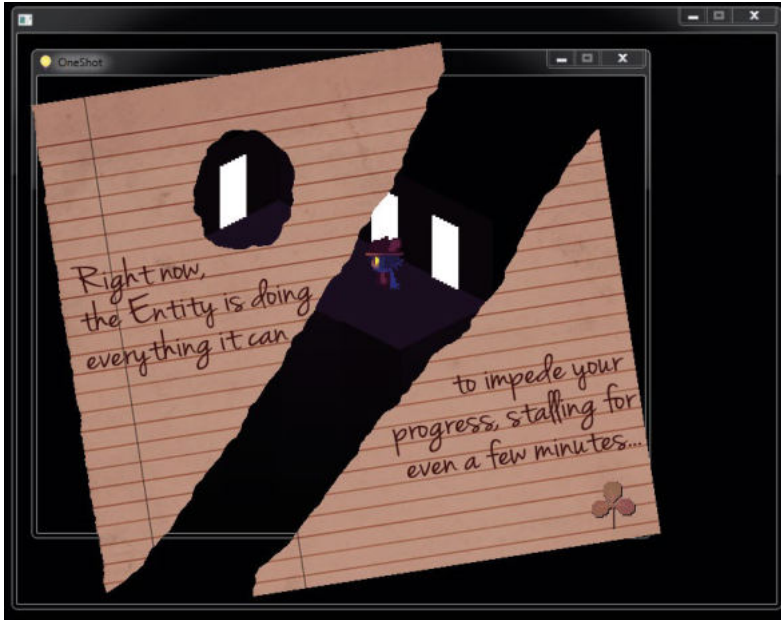


Fig. 2 Superimposed game windows of *OneShot*.

right, they do not head east but follow a link that may lead to any one of the rooms available, including the one they just left. Disorienting the player and privileging the “discontinuity of digital communication” over “illusions of real space” (Aarseth 2001, 164), the game challenges players to think beyond the representational level of the game to also take into account its specific digital materiality.

The only ‘map’ to this “unmappable” space (Fernández-Vara 2007, 75–76) is stored off-screen in the form of code that can be read by the program, but not the average player. However, the game plants a second program application (the .exe file marked by the clover-shaped symbol; » *fig. 1*) in the computer’s documents folder which translates computational logic back into signs intuitively legible to the human mind. Once the player starts the second program, a semi-transparent window opens. Superimposing it on the game’s main window indicates the correct path (» *Fig. 2*). In order to progress in the game spatially, as well as narratively, players need to piece together bits and pieces stored in various locations on the computer—including but not limited to the fictional game world. Thus, the puzzle can be read as an allegory of how multiple components (images, texts, interface, operating system, data, code, ...) work together to create meaningful affordances for navigating the spaces of a video game world.

The dissection of the game world into its components constitutes an almost polar opposite to immersive worldbuilding. As the aesthetic illusion shatters, the player

is ‘kicked out’ of the game world; reminded that what is represented to us as a coherent world is actually the product of code and algorithms realised via a computer’s processing power. Even the game ‘files’ the player is asked to interact with are spatial metaphors whose function is to translate between the mathematical language of the operating system and the minds of the users. These metaphors, the most prominent of which is probably the desktop, have been naturalised to the point of invisibility. *OneShot*, in turn, denaturalises the processes involved in constructing the various worlds of virtual space, and thus makes them visible not only to the designer but also the player.

The metaleptic transgressions in *OneShot*, then, not only engage ontologically different levels of narrative embedding but also take place at the intersection between the game’s story world and the ‘world’ of computation. These transgressions play out and become visible via the graphical user interfaces of the computer, whose functions, aesthetics, and complex and multilayered interactions in turn become the subject of player attention and reflection. The game’s narrative premise of a world in a loop of destruction and recreation finds its thematic continuation on a metalevel. *OneShot* self-referentially presents a game world alternating between construction through worldbuilding and deconstruction by means of metareferential illusion break. At the end of *OneShot: Solstice*, even the metaphor of player transportation is brought full circle as Niko walks out of the game window and across the desktop to seemingly disappear beyond the screen.

Conclusion

The dream of digital technology and especially of computers as “World Machines” (*OneShot: Solstice* 2017) has accompanied the development of video games and VR since their beginnings. As Brenda Laurel puts it in *Computers as Theatre*, the use of spatial metaphors as a basis for interface design has fostered the idea of *the computer as a representative of a virtual world*, rather than a (mere) tool (2013 [1991], 151). Many games, especially open world and adventure games, are primarily concerned with the navigation, exploration, and narrativisation of space, turning interactive 2D or 3D environments into full-fledged possible worlds that can be inhabited by the player, and that she experiences as profoundly spatial. That these possible universes are in turn built on a computational architecture of code, programs, data, or links is normally well hidden beneath several layers of representation, lest the player’s immersion in the world be disturbed. However, recently, there seems to be a trend, especially in independent games, to expose this computational architecture as part of a reflection

on the narrative, cognitive, and informatic processes of worldbuilding that characterise the genre.⁶

OneShot responds to both of these trends—immersive worldbuilding and self-referentiality—by supplementing the presentation of a fantastic story world with a meta-commentary. On the one hand, the game presents an intriguing and multilayered environment for the player to explore, manipulate, and inhabit. It even enacts the player's (metaphorical) movement from the ontological plane of the actual world to the embedded world of the game, which constitutes the premise of immersive play. On the other hand, by drawing attention to the fictionality of its story world, its dependence on rules and mechanics, and to the spatial metaphors structuring the invisible architecture of the game's code and data, *OneShot* self-reflexively addresses its own digital materiality and the ways this affects the construction of said game world. In addition to a puzzle adventure game presenting a fairly conventional quest plot, then, *OneShot* is also a metagame that discusses central concepts of game design. In the context of this volume, *OneShot* is consequently best understood as a self-conscious commentary on the role of video games as world phenomena and hence as a productive critical perspective on the architectonics of game worlds.

Figures

Fig. 1–2: Screenshot by the author (Degica 2016).

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6 E.g. *The Stanley Parable* (Davey Wreden, Galactic Café 2013), *Pony Island* (Daniel Mullins Games 2015), *Undertale* (tobyfox 2015), *Doki Doki Literature Club* (Team Salvato 2017), or *Break the Game* (Fredholm 2019).

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4. Sound, Haptics, and Artistic Research Approaches Beyond the Brinks of Game Space

Borderless Sound

Marcus Erbe

Abstract For various technical and practical reasons, many games that are available on the PC platform allow the user to switch between different display modes. One of these is the windowed mode, where the visual side of gaming—in contrast to the constantly occurring spatial diffusion of sound—becomes an evidently framed experience through the sight of a screen within a screen. This particular situation calls to mind Michel Chion’s theoretical musings on the spatial relations between image and sound in film, according to which sounds are of a more expansive nature than the moving image. In this article, I will pose the question whether the same can be said regarding audio-visual situations in video games. Keeping in mind that digital games are software and thus prone to all sorts of unintended relationships between image and sound, I will pay special attention to such faulty configurations. Rather than putting these in a negative light, however, I argue for a greater consideration of sound bugs in perceptual analyses of games.

Keywords Audio-visuality, spatial relations, analysis, sound bugs

Introduction

Whenever a PC user starts up a modern video game and enters the graphics section in the settings menu, he or she is given the choice between three display modes, usually referred to as fullscreen, windowed, and windowed borderless mode. The particularity lies within the windowed mode in which it becomes apparent that the visual side of gaming is a rather framed experience when the player catches sight of a screen (marked by the window frame of the running application) *within* a screen (as indicated by the display bezels of the monitor, TV set, etc.). Even the other display modes merely create the illusion that one less instance of framing is involved as they make the bars around the windowed content indistinguishable from the remaining software application.

But why do I open a paper that bears the word “sound” in its title by referring to a purely visual and also quite boring technical process? After witnessing the maximisation and minimisation of game windows literally hundreds of times, at one point it occurred to me what Michel Chion had written about spatial relations between image and sound in the ‘neighbouring’ medium of film. Assuming that the following is of some significance also for video games, let me cite the relevant passage from Chion’s formative book *Audio-vision: Sound on Screen*:

If we can speak of an audiovisual scene, it is because the scenic space has boundaries, it is structured by the edges of the visual frame. Film sound is that which is contained or not contained *in an image*; there is no place of the sounds, no auditory scene already preexisting in the soundtrack [...] (emphasis in the original, Chion 1994, 68).

Following this train of thought, it could be argued that unlike the visible content of a film, all its sonic occurrences are to a certain degree ‘borderless’ because they have to be projected—through loudspeakers—into a three-dimensional space instead of being projected onto a surface that happens to occupy only a small portion of said space. Nevertheless, it is this surface or, to be more precise, everything that is going on within the confines of the movie screen, which lets certain elements from the spatially diffused totality of film sound obtain their specific spatial identity. Again, in the words of Chion:

What do sounds do when put together with a film image? They dispose themselves in relation to the frame and its content. Some are embraced as synchronous and onscreen, others wander at the surface and on the edges as offscreen. And still others position themselves clearly outside the diegesis, in an imaginary orchestra pit (nondiegetic music), or on a sort of balcony, the place of voiceovers. In short, we classify sounds in relation to what we see in the image, and this classification is constantly subject to revision, depending on changes in what we see (Chion 1994, 68).

So obviously we can make a fundamental distinction between sounds that become glued to characters, objects, and actions by virtue of exact audio-visual pairings during the editing of a film, and another class of sounds that have the potential to expand the cinematic space beyond the visible. Here we might think of sonic markers such as birdsong, the howling of wind, or the subtle background noise dubbed over certain locales, all of which help to define the spatial feel of a scene. And there are further sounds with no visible sources like disembodied voices or sudden impacts

outside the scenic space that may trigger an active auditory search for their cause on the part of the recipient. As is to be expected, the situation outlined turns out to be much more complex in practice, especially when the art of mixing comes into play. By carefully layering and processing the sonic materials, by exaggerating the properties of some and suppressing the characteristics of others, it is possible to constantly shift the borders of the perceived auditory space in relation to a film's visual content. Such manipulations of scale can in fact involve all types of sound, including those that have a clear analogy on-screen and would normally not stand out much. To illustrate this with an example, we can take a closer look at a chase sequence from *Blade Runner* (D: Ridley Scott, US/GB/HK 1982) that Chion only mentions in passing (cf. Chion 1994, 191). The scene begins with an extensive acoustic layout dominated by a large number of ambient sounds to represent the hustle and bustle of the surrounding city as protagonist Rick Deckard prepares to hunt down and eventually shoot the replicant Zhora Salome. In deliberate contrast to the rising tension of the ensuing manhunt, this vast backdrop of sound gradually makes room for a combination of gentle music and various emphasised sonic events. The externalised internal sound of heartbeat indicates the female character's battle with death, but at the same time it can be interpreted as the rhythmic foundation of the musical accompaniment. The gunshots as well as the shattering of glass are given their own space with the help of audio filtering and reverberation. This auditory impression is certainly reinforced by the concurrent use of slow-motion visuals.

Audio-Visual Spatiality in Video Games

Starting from the filmic situation just described, I would like to raise the question whether similar or maybe entirely different orchestrations of audio-visual spatiality can be found in a medium that depends completely on computerised processes for the construction of virtual worlds. While doing so, I have to be careful not to equate films and games unreservedly. After all, the concrete manifestation of a digital game breaks down into many personalised variants. Unlike watching a film whose images and sounds have been fixed along a clearly defined time axis, the audio-visual horizon of a video game usually results from the interaction between a given realm of possibilities and a series of decisions to be made individually. However, the very fact that digital games are software makes them susceptible to all sorts of unintended relationships between image and sound. So how does it affect the perception of a game's spatial boundaries when there is a mismatch between the said elements?

With these considerations in mind, I analysed several of my own gameplay videos that I recorded between December 2016 and November 2019.¹ Something that quickly emerged was that despite the dissimilarities between film production and video game development, and regardless of their media differences concerning audience agency, both film-like extensions and contractions of the perceived space can be observed in a game's interplay of image and sound. For instance, we find the heartbeat topos in *Blade Runner* and countless other films realised in a similar fashion during the opening level of *Destiny 2* (Bungie 2017). With the health bar almost drained, the player is forced to follow the game's decelerated pace after being severely wounded in combat. Since the richly orchestrated background music stopped shortly before, the remaining extremely low and regular bass thumps might be perceived as a kind of compositionally reduced funeral march. However, it is safe to assume that the almost infrasonic beats are primarily related to the physical condition of the avatar—an impression that is reinforced by the accompanying contractions of the image space, which seem to indicate the twitching of the heart muscle. The puzzle-platformer *Inside* (Playdead 2016) confronts us with a slightly different situation in which the nervous heartbeat of the avatar, who is a little boy lost in a strange and hostile world, transforms from a disproportionately loud internal sound into a musical part. From this moment on, one has to listen attentively and react in the course of a small rhythm game that also incorporates a sequence of footstep sounds into the musical fabric. Although the acoustic magnification of the heartbeat follows a predetermined cinematic pattern, the invitation to the player to manually connect with the sounds lies outside the possibilities of film.

One may also encounter configurations that can neither be clearly assigned to the world of film nor to the realm of games but rather adhere to the traditions of radio-phonetic art, in so far as time and space are almost exclusively evoked by sound. Such a thing occurs at the start of the Stone Age epic *Far Cry Primal* (Ubisoft Montreal 2016), which transports the player to the Mesolithic of Central Europe. The virtual journey through time begins acoustically. While the years tumble on the otherwise black screen, countless superimposed soundscapes present themselves to the ear. They consist of assembled language fragments from all around the world, sounding artefacts of human communication, transport and war, as well as scraps of music. The ringing of a cell phone gives way to a host of radio messages and Morse signals. Church bells calling for worship resound; after these, one hears ritualistic drums. The noises of a metro entering the station are followed by the puffing of a steam locomotive, the rattling of wooden carriages, and the clatter of hooves made by galloping horses. Machine gun salvos turn

1 The situation of playing VR games with a head-mounted display is specifically not addressed in this article. It would be worth a separate investigation in the given context, seeing as how traditional notions of screening or rather of an enclosed visual space are beginning to crumble in view of full-circle projection.

into sword blows, which then morph into buzzing arrows and whistling slingshots. In a transition to the fourteenth century, a Gregorian chorale flashes up, replaced by the nasal tones of an ancient oboe, later by an archaic chant. All these tiny sound splinters indicate stages of civilization. The closer one gets to the target date, the more nebulous the acoustic events become. Undefinable swooshing noises and abstract bass eruptions gain the upper hand until the countdown effectively ends with a dull bang in the tenth millennium BCE. Interestingly enough, these last shadowy sounds, which stand for an unknown primeval auditory culture, are only filled with life in the course of the game as the successive growth of the Stone Age village, for which the player carries responsibility, is reflected in the increasing musical activity of its inhabitants.

On a much smaller scale than in the previous example, both the passing of time and the passage through space are sometimes made audible on loading screens, as is the case with the fast travel system in *Tom Clancy's The Division* (Massive Entertainment 2016). Although musical pieces and sound effects in such situations primarily serve to mask interruptions in the flow of the game (see also Summers 2016, 20), the developers here succeeded in transferring the game's winter landscape into travel noises to suggest a walk through snow-covered terrain surrounded by icy winds, even if the game is just on hold.

Traversing the Spaces (and Struggling with Time)

Up to this point, we have seen that creators of video games, very much like filmmakers, are well-versed in employing different combinations of visuals and sounds to make us forget that the internal spaces and places of a game are externally confined to a geometrical plane with some added electroacoustic transducers, be they loudspeakers or headphones. It is possible to tamper with the perceived proportions of the spaces on display through audio-visual trickery and in doing so, evoke a wide range of sensations between extreme trepidation and immense freedom, perhaps even undermine our spatial epistemology completely. The fact that we can navigate the represented worlds ourselves in games and that the pace as well as the extent of this movement can vary from moment to moment, may add a further level of meaning.²

What comes to mind immediately in this context is the standard gaming situation of racing against the clock. A simple means to musically reflect moments of growing threat and especially of playing under time pressure is to either up the musical tempo

2 With regard to a staged expanse of open world games and their chronotope, i.e. the ideology between player-induced *free roaming* and the governed experience of quest lines induced by developers, see Bonner's chapter in this book.

or let the game engine cut to a second, more vividly composed piece. In *Far Cry 5* (Ubisoft Montreal, Toronto 2018), the sound designers went a different way by fabricating an extremely time-stretched version of The Platters' sentimental doo-wop song *Only You* (1955). Story-wise, the avatar, who was instilled with a hallucinogenic drug, is encapsulated in time. Accordingly, the player is doomed to repeat the level over and over again, until he or she has finally become skilled enough to gain access to the rest of the game. Thus, the dragged-out Platters piece perfectly captures both the narrative aspect and the player's temporary confinement.

In other cases, certain sonic assemblages serve to establish at least an aural connection to those areas in a game world that either cannot be accessed at all or cannot yet be entered. During the first chapter of *Uncharted: The Lost Legacy* (Naughty Dog 2017), players enter the rooftops of an unspecified Indian city in which a war is raging. Although parts of the city that are fiercely fought over remain inaccessible to the player, the camera work at this point invites one to pay attention to the distant events for a while. What attracts the most attention and expands the limits of the experienceable space noticeably are some faraway explosions, the wails of sirens and several other combat noises. At the same time, this accumulation of rather faint sounds marks the prelude to the deafening pursuit over the roofs that takes place shortly afterwards, in which the player-character Chloe Frazer is suddenly shot at from all sides.

A Tricky Comparison

As mentioned before, I am well aware of the problematic fact that at the heart of my observations on the audio-visuality of video games lies a book concerned with sound in cinema. A comparison of any kind between narrative films and digital games, however, will only be adequate if a game or at least parts of it present themselves in the spirit of film. And even then, such games can differ considerably from films in their acoustic internal structure. Listening closely to *Assassin's Creed Syndicate* (Ubisoft Quebec 2015), I noticed an exceptionally high level of detail in the sound design. Contrary to the cinematic practice of resorting to a few typified sounds for the characterisation of spaces and places (Chion 1994, 74–75), the acoustic environments in the game are extremely dense. In an attempt to authenticate Victorian London at the height of the Industrial Revolution, almost every passer-by, every carriage, every single horse hoof, indeed, all subjects and objects that can produce sound have been assigned distinct acoustic events. Depending on the locale, one will be confronted with situations in which, simultaneously, market criers advertise their goods, birds chirp their songs, a steam locomotive leaves the station, ship horns blare from the nearby River Thames, pedestrians have lively chats, horses gallop over the asphalt, and steam engines spring

to life. In the meantime, the player-character is involved in a conversation with the next quest giver. The relatively good audibility of such sound agglomerations is due to the fact that the intensities and locations of all audio assets are managed by the game engine in relation to the panning of the virtual camera and the position of the avatar (this may cause some problems in isolated cases, as I will explain later in the text with regard to *Red Dead Redemption 2*).

Furthermore, while calling movies and games in one breath we should bear in mind that the narrative-driven video game is not the rule. Round-based strategy titles or casual games like *Fated Kingdom* (GameLiberty 2019) and *The Elder Scrolls: Legends* (Dire Wolf Digital 2017) mark the continuation of board and card games by other means. If they nevertheless contain narrative set pieces, these are often conveyed in the style of comics instead of using virtual cinematography. Many video game classics, such as *Pong* (Atari 1972) and *Tetris* (Alexey Leonidovich Pajitnov 1984), manage without telling a story whatsoever. *Pokémon Go* (Niantic 2016) and similar titles use GPS to reproduce the model of a scavenger hunt, and the staging of today's sports simulations is based on the dramaturgy of live television broadcasts. Only traces of a cinematically informed practice can be discovered in the presentation of non-narrative games, particularly in the field of audio design. When, for example, a virtual card is played in the digital collectible card game *Hearthstone* (Blizzard Entertainment 2014), the character depicted on it makes itself loudly felt with a battle cry. At other times, an unseen audience bursts into cheers, thus pushing the boundaries of the visible game board.

The search for more recent theoretical frameworks emphasising the particularities of game audio in contrast to the sonic traditions that cinema brought forth inevitably leads to Kristine Jørgensen's insightful book chapter *Emphatic and Ecological Sounds in Gameworld Interfaces* as part of *The Routledge Companion to Screen Music and Sound* (2017). In pursuing the idea that game worlds should be seen as living ecosystems (Jørgensen 2017, 72, 75) where sounds, much like in the real world, indicate dynamic changes in the environment, Jørgensen puts forth a sonic interaction-communication model. In brief, she distinguishes between ecological sounds that players perceive as being more or less realistically "produced by a particular source inside the gameworld environment" (ibid., 79) and emphatic sounds. The latter has the main purpose to inform the player about issues related to gameplay mechanics, for example a shift in music that hints at the approach of enemies or various feedback signals when clicking through the inventory.³ Jørgensen goes on to assess whether ecological as well

3 An interesting hybrid of ecological and emphatic sounds can be found in *Ghost of Tsushima* (Sucker Punch Productions 2020). The open world game features some small animals, which are supposed to lead the player to specific points of interest. Since these critters are difficult to spot with the naked eye in the game's dense vegetation, hearing their distinctive calls almost automatically triggers a search reflex and eventually puts the player on the right path.

as emphatic sounds are “motivated by fictional or ludic coherence” (ibid.), whereby she aims to replace the common distinction between diegetic and nondiegetic events. Although her analytical categories are ideally suited to describing the functional aspects of individual sounds and how users might react to them, the sounds’ material qualities remain largely ignored.

In a paper on the depiction of wilderness in video games, Marc Bonner quoted the art director Jan-Bart van Beek, saying: “Game worlds are always Disney-like versions of the real world. Everything is smaller. If a mountain is 3000 m high, we make it 300 m” (Bonner 2018, 17). And one would have to add that sound is often used to make things appear bigger again. The puppet-like dimensions of the characters in the *Dragon Age* series (BioWare 2009–2014) for example are hardly effective in giving the player a sense of power in combat. Instead, this is achieved by the eruptive, excessively loud nature of the sword blows and the acoustic swelling of the spells being cast, combined with the rumbling amplification of the lower frequency range. With the concrete sonority of the described elements, aesthetic categories come into play that exceed the purely functional facets of sound.

The Usefulness of Bugs

Since Jørgensen understands games primarily as living ecosystems, her theoretical framework is best suited for game worlds that actually simulate natural habitats and landscapes. Also, to conceive games as ecosystems carries with it the notion of an environment in which everything is always meaningfully related to each other. Therefore, it is not surprising that Jørgensen’s functional model focuses on straightforward relationships between sounds, visuals and player actions. This actually leaves a lot of room for addressing all the ambiguities that result from the medium’s charming susceptibility to error and imperfection. I would like to argue that bugs and glitches are an integral part of the gaming experience. We can observe this regularly on YouTube when content creators take great delight in compiling disruptions of game physics and geometry. For whatever reason, audio bugs are hardly a target here, even though they can be analytically quite relevant, as the shortcomings of media artefacts also allow drawing conclusions about their nature.⁴

Rather common are situations in which either faulty audio cues or inappropriate volumes undermine the originally intended perception of space. In *Far Cry New Dawn* (Ubisoft Montreal 2019), for instance, I was able to witness the inadvertent emergence

4 A methodical problem with the analysis of bugs is that they cannot always be reproduced or only occur in a specific build of the game.

of a surreal space during the transition from an outside to an inside. This happened when I or my avatar, coming from outdoors, entered a collapsed highway tunnel in which there was a burnt-out bus. As soon as I walked through the bus wreck, a cheerful birdsong and the humming of insects replaced the tunnel's diffuse background noise. The soundscape in question, as if appearing in the interior of the bus in some magical way, was identical to the sounds of nature I had just heard in front of the tunnel entrance. Now, it unexpectedly repeated itself in an impossible space. A similarly confusing example can be found in *Shadow of the Tomb Raider* (Eidos Montreal 2018). Under certain circumstances, Lara Croft and one of her interlocutors are acoustically separated from each other, despite standing and talking in the same spot. This is most likely due to an incorrectly implemented reverb algorithm, as the acoustic properties of the cave where the conversation takes place affect only one of the two voices.

Another case in point which can be found online (Morgue & Mufasa 2018) demonstrates how sonic configurations that cannot be made sense of at all may interrupt the flow of a game. The disturbing element this time is an off-screen gunfight during a multiplayer session in *Fallout 76* (Bethesda Game Studios 2018) that should have been heard from afar. Instead, it strikes one of the players depicted in the online video with deafening intensity and leaves him disoriented. After finding out from his co-op partner that he is the only one capable of hearing the misleading noises, he spends the next few minutes searching the entire environment for the sound sources without ever finding them. Even if only the result of a technical malfunction, the incapability of this acousmatic situation illustrates the potential of game sound to really become 'borderless' very well. This proves to be especially true when the player finally looks towards the sky and jokingly locates the origin of the noises there.

From obvious bugs, as they have just been described, we can distinguish audio-visual inconsistencies that are present in a game because certain features have not been implemented.⁵ I will explain the difference by referring to two musical performances from *Horizon Zero Dawn* (Guerrilla Games 2017). The first one takes place in a tavern in Meridian where a house band provides musical entertainment for the guests.⁶ At times, the execution can be plagued by an outright bug as the script telling the musicians to play their instruments is not carried out properly. Thus, the

5 Or simply because certain audio cues are being interpreted with a time delay. In the prologue of *Star Wars Jedi: Fallen Order* (Respawn Entertainment 2019), the player-character has to fight his way through a moving freight train. As is to be expected, the train's driving noises change drastically as soon as it races through a tunnel. However, the acoustics of the open landscape are dragged into the tunnel for a short moment and it also takes a while for the tunnel acoustics to change back when the train exits. Since the process repeats itself many times, the insufficient simulation of the acoustic transitions is particularly striking.

6 For the role of taverns, marketplaces and squares in RPG games, see Bonello Rutter Giappone's and Vella's chapter in this book.



Fig. 1 Missing performance animations in *Horizon Zero Dawn*.

corresponding animations are nipped in the bud, although the music continues to play (» Fig. 1). In the same city, one may enter a church square where Carja Sun-Priests have gathered to recite a hymn. The vocal performance seems incomplete, however, as the priests vocalise with their mouths closed. Since it is highly unlikely that they are implanting their voices telepathically into the avatar Aloy's mind, and also because the scene always plays out exactly the same way, we can safely assume that it was simply not intended in the production process to bestow facial animations upon singing non-player characters.

Such examples are clear indicators of current limits to the creation of aesthetically convincing audio-visual correspondences in games. Sometimes it is simply the architecture of the developer tools that leads to irritating sensory impressions. While visiting the Saint Denis Vaudeville Theatre with avatar Arthur Morgan in *Red Dead Redemption 2* (Rockstar Studios 2018) to attend a performance of the can-can, I noticed a strange behaviour of the game engine trying to acoustically accommodate changing listening perspectives. When pushing the gamepad's thumbstick to the left or to the right, an audio filter was applied to the music, so that its high frequency components gradually disappeared with increasing camera movement, leaving a relatively dull sound. This kind of data mapping made me wonder whose point of audition the programmers intended to simulate. It could certainly not have been that of Morgan and his companion because both characters remained almost motionless in their seats, so why would the

acoustics around them change that drastically? And it was certainly not mine, since I was looking straight ahead at the screen. In fact, it was as if the invisible entity that we refer to as the virtual camera had my ears attached to it, but in a physically twisted way. First of all, the rotation of a real human body would never change the texture of the sounding music this much. And secondly, the changes only occurred when the camera rotated around the *y*-axis, seeing as the tilt of the artificial head had no effect on the frequency range whatsoever. From a technical point of view, here we are dealing with a global application of positional audio, which normally helps to differentiate between sonic events while steering the avatar but creates a somewhat impossible listening space in the given context.

This leads me back to the starting point of my investigation: If such significant discrepancies between the visible and the audible occur in the structure of a sound film, these are intentionally attempted rhetorical figures that have grown over many decades within an audio-visual language. Regardless of whether the sound sources used correspond to the sound events of the narrated world or whether what is heard merely pretends to be something it is not in reality, one will in principle be willing to accept the final sound shape of films as the result of calculated artistic decisions. Digital games, on the other hand, even though they largely share their playback conditions with those of filmic audio-visions, are temporally and spatially flexible forms that have to be ultimately realised as software.⁷ As such, they run the risk of being perceived as imperfect or partly unfinished whenever the technical framework on which they are based begins to falter. Yet, the potential to toy with these imperfections may be one of the factors that make playing video games so appealing.

7 For a more complete discussion of this difference and its implications, see Erbe 2018.

Figure

Fig. 1: Screenshot by the author (Sony Interactive Entertainment 2017).

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Image Contact

Haptic Actions in Virtual Spaces

Carolin Höfler

Abstract Since the beginning of the twenty-first century, touch has experienced a programmatic boom again. Numerous approaches in the fields of human-computer interaction, virtual reality, and game design are raising the art theoretical and aesthetic ennoblement of the sense of touch to the actual sense of reality. Current media technology efforts are guided by the goal of enhancing the visual perception of digital 3D worlds through matching and complementary tactile impressions. The touch of material shapes and structures is becoming increasingly important, especially when the recipient wearing a head-mounted display has no visual access to the things being identified by touch. But what perception of the senses and their peculiarities motivate and shape these developments? What understanding of space underlies the haptic image environments? This article takes the prominence of the haptic materials in current VR games, and experiments as a starting point for thinking about promises and disappointments of sensory feedback systems. Based on multi-sensory approaches developed at the Bauhaus in Dessau during the 1920s, the article discusses alternative designs of physical-virtual fields of action.¹

Keywords Virtual reality, immersion, haptic imagery, sensory modalities, touch information, spatial experience, feedback systems, digital-physical interaction, virtual embodiment, enactivism

- 1 The matter of reciprocal relationships between the visual and tactile space in VR settings was a subject at the interdisciplinary conference *Mit weit geschlossenen Augen. Virtuelle Realitäten entwerfen (Eyes Wide Shut. Designing Virtual Realities)*, 31 May—1 June 2017, at KISD—Köln International School of Design of TH Köln, organised by Carolin Höfler and Philipp Reinfeld in cooperation with the Institute of Media and Design of TU Braunschweig. An edited volume of the conference will be published soon by the Wilhelm Fink Verlag.

Trompe-corps

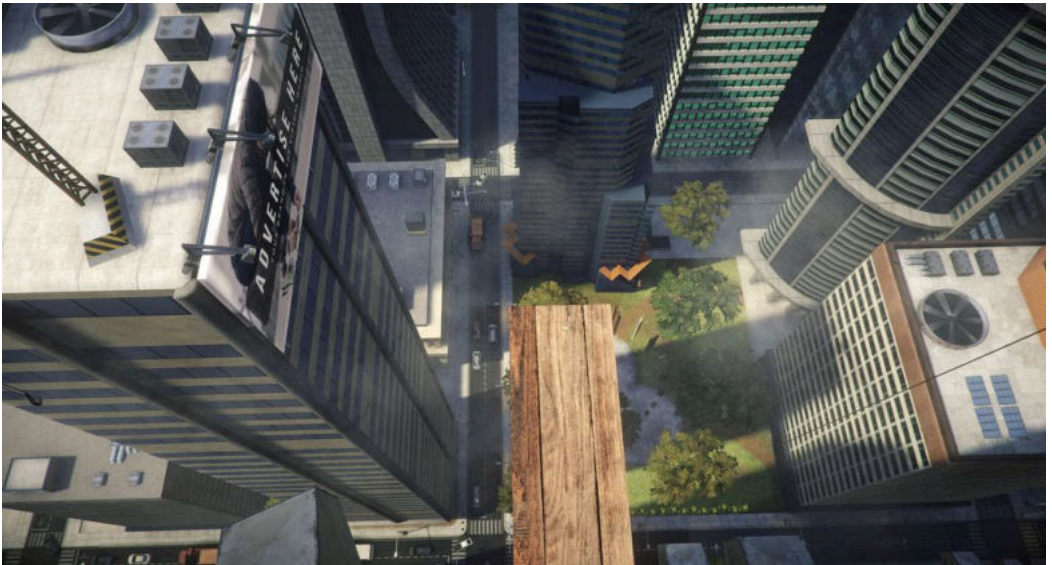
Facebook, Samsung, Google, and HTC are pushing into the mass market with their new virtual reality glasses, and promise users complete engrossment in immersive visual worlds. With the help of the latest generation of head-mounted displays, the advertising messages are unanimous: virtual realities are finally becoming ‘real’ (see Höfler 2018). The combination of two technical processes in particular gives reason to hope for an increase in reality: the stereoscopic visual impression and the delay-free tracking of head movements. They convey the impression of being with things and interacting with them, not *in front* of an image but *in* a visual space.

More than ever before, the discourse of a seamless fusion of real physical and computer-generated space in a mixed reality is dominating the research and development fields of human-computer interaction, virtual and augmented reality as well as game and interaction design. In such a mixed reality, either the physical environment is enriched with virtual information—as in augmented reality scenarios—or the virtual environment is enhanced with physical information—as in virtual reality applications that work with haptic feedback. Both manifestations would form intermediate stages in the “reality-virtuality-continuum” as researchers Paul Milgram and Fumio Kishino described it in their writings in the early 1990s (Milgram et al. 1994, 283).

The discourse on the intensive fusion of the virtual and physical world focuses on the holistics of the extended total space, which is primarily seen. In current developments, this holistic view of space is to be supported by further sensory perceptions. What unites the new VR installations and experiments is their relationship with the body of their recipient, which is no longer intended to be a mere observer but to experience the virtual scene with her entire body (see e.g. Nori 2017). The virtual world, through which the recipient with VR glasses on her head moves, is to be intensified on the one hand by the use of real-world elements, whilst on the other hand it is to appear even more intense than the physical world. To achieve this state of consciousness of intensified perception, aspects of virtual 3D environments are physically materialised and integrated into the VR setting.

One such work which seeks to deepen sensual perception in this way is *Richie’s Plank Experience* by the Australian game developer collective Toast VR (see Toast VR 2016) as seen on » *Figure 1*. With VR glasses on his head, the recipient finds himself in a big city and enters the virtual elevator of a skyscraper. The door opens high above a skyline. A beam protrudes out over the abyss. In the physical presentation room, there is only a wooden board on the floor on which the headset wearer balances.

But through the images the wearer sees through his glasses, it seems as if he is stepping out onto a life-threatening unsecured wooden plank, especially since a fan is blowing wind in his face. He peers down into dizzying depths through his glasses, as the wind blows more and more powerfully (» *Fig. 2*). The body reacts energetically. The headset wearer tentatively gropes into the abyss with his foot—it is firm and stable, yet the images show him that he is falling.



Toast VR, Richie's Plank Experience, 2016.

Fig. 1 Installation view, Frankfurter Kunstverein.

Fig. 2 Virtual reality game, screenshot.

Currently, numerous VR projects are being developed that aim to stimulate not only what the eye sees but what all the senses perceive, such as *Swing VR* by Christin Marczinik, Thi Binh Minh Nguyen, and Felix Herbst, in which you sit on a swing with VR glasses and gaze at a fantastic landscape (see 2015). The more you swing, the higher you fly. The involvement of the viewer in the fictitious spatial scene is not only achieved here through immersive images but also through the physical movements with which the images can be controlled. Who is driving whom or what, and what is cause and effect in the relationship between man and machine can no longer be clearly determined. Precursors of such an oscillating experience can be found in interactive installations that are experienced with full physical effort. In “Run Motherfucker Run” by Marnix de Nijs (2001/2004), the viewer literally walks through a projected film (» Fig. 3).



Fig. 3 Marnix de Nijs, *Run Motherfucker Run*, 2001/2004.
Installation view, Frankfurter Kunstverein.

Her physical movement on a treadmill triggers various scenarios, as she decides which path she wants to take within the visual space. The projection shows a combination of film and 3D images of a gloomy urban environment, which makes the run seem like an escape. If the user immediately stops running, the belt that continues to move throws her to the ground. The treadmill as the central input device leads to a special form of physical mobilisation. The picture positioned directly in front of the viewer, diminishing the distance between subject and object, between the person watching and the things being watched, makes the (re)acting body become itself a medium for its individual imagination and self-deceit.

As architecture critic Niklas Maak recently noted, all these media installations are about intensifying body perception and pushing back knowledge of the real physical environment and situation: “The classical ‘Trompe-l’œil’ is followed by the ‘Trompe-corps’” (translated from German by the author, Maak 2018). But do the scenarios really exhaust themselves in deceiving the body of the recipient, as in the representation of great heights? Is it not also a matter of using the body to re-establish a relationship to the physical world? Works such as *Richie’s Plank Experience* or *Swing VR* aim not only to deceive the body through the image but also to realise the image through the body. The image experiences its realisation when the viewer stands on a real plank or sits on a real swing, for example, even if these things are represented differently visually and spatially. The sensory and motor perceptions, the experiences of balance and imbalance bind the body back to the physical space. However, the gaze remains unleashed, which is reinforced by other sensory perceptions, such as the feeling of the wind in the air. In this way, the digital image world triggers violent physical reactions. The memory of an experience in virtual space is often more intense than that of an event in physical space. Involved in the interactive moving images, the body, in the sense of enactivism, actively creates an experience in virtual space that is not stored as a virtual imagination but as a real experience (see Breyer 2016, 43). This shifts the meanings that the recipient assigns to the physical and mediated sensory impressions.

Starting from here, the question arises as to how perception changes when the physical space in which the headset wearer is located is not replaced by fictitious visual worlds but is digitally constructed and can be viewed and controlled through a VR headset? Similarly, perception may also change when aspects of virtual space are physically reproduced and are thus experienced haptically. A VR headset then gives the impression of being transparent by allowing the user to look into a photorealistic, stereoscopic digital model of their immediate surroundings. Only the contrasting comparison of the virtual visual space and the physical model space provides revealing insights into the construction of reality and virtual worlds, as Ken Perlin, computer scientist and founder of the Media Research Lab at New York University, recently discussed (see Munich ACM SIGGRAPH 2015). The new conditions of human perception in relation to technically constructed realities become visible primarily through the evaluation of perception alternatives.

Dialogic Spaces

At present, virtual reality parks are being created in the leisure and gaming sector that allow such a comparison of perceptions. In 2016, the US start-up with the speaking name *The Void* built an eponymous amusement park in Pleasant Grove, Utah, in which components of the virtual play spaces were physically materialised (see Gruber 2015). Visitors wear data glasses called Rapture HMD with two curved, extremely high-resolution screens, integrated headphones and a microphone. They also put on a vest and gloves, which contain numerous sensors for haptic feedback and body tracking. With the hardware attached to their bodies, they walk through an ensemble of physically constructed rooms, which in turn are equipped with numerous motion and interaction sensors. At the heart of *The Void* is a playing field called the *Gaming Pod*, a system of corridors up to 330 square metres in size, where players can move freely without the risk of bumping into obstacles (» Fig. 4).

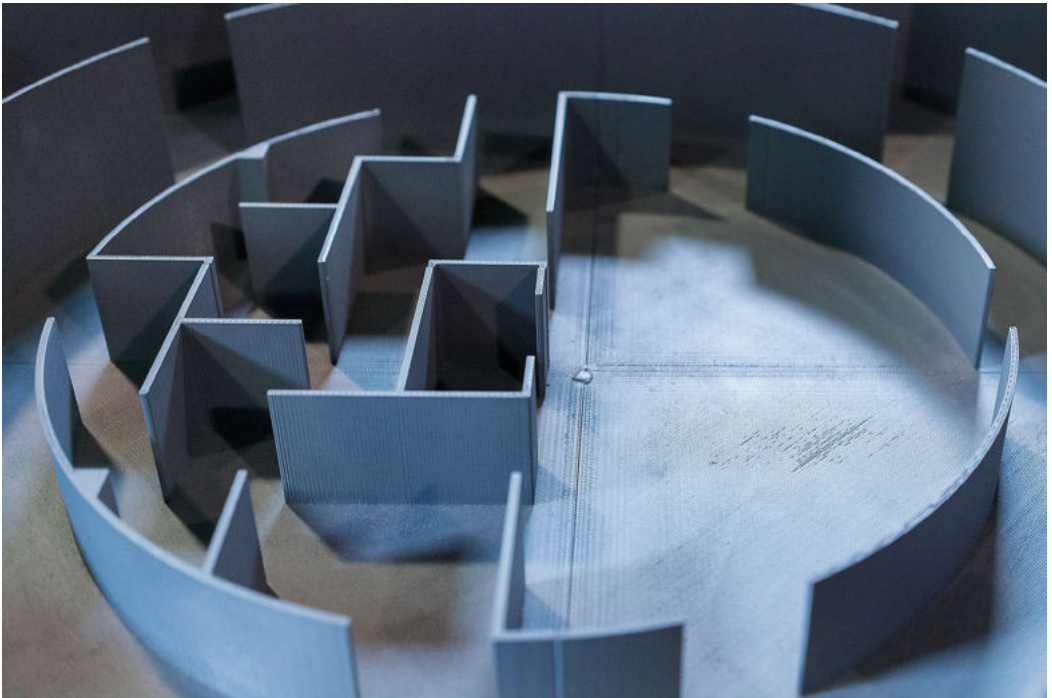


Fig. 4 Model of the playing field at the VR theme park *The Void*, Pleasant Grove, Utah.

The physical boundaries and objects of the playing field are integral parts of the digitally constructed visual spaces. The real game architecture is digitally modelled and incorporated as a visualisation into the VR headset, where it is overlaid with interactive moving images of textures and 3D figures. These projections appear exclusively in the virtual space, whereas the player's actions are performed simultaneously in the physical and virtual space. In this setting, the visitor, equipped with display and wearables, physically and digitally intervenes in the course of the game and tentatively controls the moving images projected onto the digital space surfaces. In order to involve the players even more intensively in the physical-digital construction of reality, specific facilities and equipment ensure that they can feel heat, cold, humidity, vibrations or differences in height, perceive smells and touch objects.

The Void's promise consists of fully immersive imagery, an extension of situated images into the depths of space, whose visual perception is enhanced by matching and complementary sensory impressions in physical space. But which perception of the senses and their peculiarities motivate and shape this promise? What does it mean for perception, orientation and navigation when real-time digital images reproduce the surrounding space but take away the immediate view of the space to be felt? So, what if visual space ("Sehraum") and physical tactile space ("Tastraum") are separated from each other and at the same time reunited by digital, real-time generated moving images of the surrounding space? What dependencies and interrelationships are there between the *physical here* and the *pictorial there*? What forms of attributions are developed when the pictorially depicted space corresponds to the size dimensions of the physically built surrounding space but still has other material and haptic qualities? What shifts in perception and scaling effects arise when—as in *The Void*—a scenic architecture of simple forms and solid materiality is palpated but a space of high density, fluidity, light and information is seen? Can perception be replaced by imagination?

Senses of Realness

Physical-digital environments like *The Void* are based on a holistically oriented model of sensory structure, according to which the senses, each belonging to a specific field of perception, perform synthetic services in the constitution of space. It is this conventional notion of the unity and weighting of the senses that today shapes the use and interpretation of virtual reality processes. Although sensory perceptions are intensively linked with each other, the physical-digital VR environments—especially in the game and entertainment sector—are based on a perception model in which seeing plays a central role and ranks hierarchically above the other forms of

sensory perception. This is expressed, for example, in the fact that physical objects and room boundaries are reduced to simplify outer contours, whereas interactive moving images increase in detail and complexity. The method of screen-based, stereoscopic vision, which aims at heightening and intensifying the visual perception, can thus be regarded as a possible starting point for the reconceptualisation and radical expansion of the traditional hierarchy of the senses with vision at its peak (see Fehrenbach 2011). The classificatory scheme, in which priority is given to the sense of sight, is now motivated and influenced by the use and interpretation of mobile display techniques.

The renewed debate about the interaction of physical and cognitive performance in the experience of space can be understood as a continuation of a line of tradition that began in the sensualist aesthetics of the eighteenth century. Within this line of tradition, theorists and architects developed a perspective on space that exists only as a dependent on the recipient and the totality of his or her perceptual and emotional impulses (see Gleiter 2008, 113–26). This is determined by the idea of an emotional fusion of subject and object in aesthetic perception, for which Robert Vischer coined the term “empathy” or “Einfühlung” in 1872 (Vischer 1873, VII; 18–33). Instead of continuing the traditional procedures of representation, ornament, and iconography, the aim was to re-conceptualise architecture within the context of synaesthetic, visual-tactile perception. Insights into such a change of perspective were provided by the essays *Prolegomena zu einer Psychologie der Architektur* (Prolegomena to a Psychology of Architecture) by Heinrich Wölfflin in 1886 (see 1946), *Ueber den Werth der Dimensionen im menschlichen Raumbilde* (On the Importance of Dimensions in Human Spatial Creation) by August Schmarsow (see 1896), and *Das räumliche Sehen* (The Spatial Vision) by Paul Klopfer (see 1919). Instead of a fixed spatial principle, a dynamic principle is used here, according to which space is created at the moment of perception. The notion of a moving, active recipient is regarded as a prerequisite for this kind of spatial formation. According to Schmarsow, space is created from a concatenation of mental images, from the physical movement, in the transition from the “tactile space” to the “face space” (1896, 50, 54–55). More systematically and dispensing with psychologism, philosopher Edmund Husserl summarised the concept of the sensomotoric connection of all senses and the sensual-bodily constitution of perception. The modern phenomenology of space, as Husserl established it in his lectures at the beginning of the twentieth century, assumes that the impression of space is related to the consciousness of one’s own body movement and is the result of a sequence of perception in motion (see 1973, 155–56).

Referring to these phenomenological and psychological approaches of the first half of the twentieth century, Hungarian philosopher Alexander Gosztonyi tried to define the characteristics of the individual senses in his *Grundlagen der Erkenntnis* (Fundamentals of Knowledge) in 1972 (see 1972, 67–97). He not only considered the five

classical senses i.e. sight, hearing, touch, smell and taste but also the “senses of bodily feeling”, of which “the sense of vibration, the sense of temperature, the sense of balance, the sense of gravity and proprioception” were the most important (ibid., 67–68). His interest was directed towards the question of how the different senses compete or are linked with each other.

Constitutive for the prevailing physiological-rational understanding of human-computer interaction, virtual and augmented reality as well as game and interaction design is Gosztonyi’s emphasis on the “quality of realness” (“Wirklichkeitswert”) above all, which every sense has in two ways. Every sense has a “quality of reality” (“Realitätswert”) and a “quality of evidence” (“Evidenzwert”) (ibid., 68). According to Gosztonyi, the sense of touch, as a sense of nearness (“Nahsinn”), has a high quality of reality because it allows the material resistance to be experienced, whereas the sense of sight has a low quality of reality. The sense of sight, as a sense of farness (“Fernsinn”), has evidence of high quality because it is able to provide an overview and insight into formal relationships. According to Gosztonyi, it is the interplay between the qualities of reality and evidence that determines the degree of realness of the perceived environment.

Even though Gosztonyi regarded the reciprocal relationships between the senses as prerequisites for the construction of reality, he assumed a hierarchical order of senses: “The sense of touch is not dominant. [...] The one who sees subordinates the things touched, ranks qualities and forms of touch, and arranges it in order according to his field of view” (translated from German by the author, ibid., 81). Such traditional notions of the peculiarity and hierarchy of visual and tactile-haptic sensory perceptions continue to have an effect on the discussions about physical and virtual realities. The notion of the sense of touch as a somewhat concise sense of pressure, which generates reality all the more strongly, currently determines the design of mobile devices and interactive environments, whose physical interfaces provide haptic feedback. In contrast to the visual forms, the tactile forms are only weakly developed.

Circular Walking

The novel entanglements between the physical “form of being” (“Daseinsform”) of the tactile space and the digital “form of effect” (“Wirkungsform”) of the face space in physical-digital VR environments fundamentally change the conception and design of architectural space (Schmarsow 1896, 50). Design interest is increasingly focusing on the construction of specific fields of action, which are created by the interaction between human bodies, technical objects and physical environments. On the one hand, the built spaces are interconnected with the bodies and things through chips, tags and

sensors, and on the other hand, they are designed for specific sensory perceptions. This means that space- and object-defining surfaces in the physical setting are shaped in such a way that assumed or desired sensory perceptions, spatial experiences and behaviours are created in the virtual. The design-guiding question then aims at the parameters that the physical space must fulfil in order for the user of the VR glasses to accept the virtual space as *real*. How can one design, create, and arrange a physical space and its form so that the impression of a sensory and emotional immersion, of control and intervention in virtual environments can be strengthened and best achieved?

This question is based on the assumption that the wearer of the headset accepts the virtual as a physical environment, especially if she or he can move in it as naturally as possible. But the physical perception is sometimes deceptive when the recipient is denied a view of the space to be felt. Other physical experiences can be attenuated by visually intensified perception: there can be great differences between a path actually taken and one that is simultaneously fulfilled virtually, without the recipient noticing.

This discrepancy between physical and virtual movement is the motivation behind the approach of *redirected walking*, which assumes that the headset wearer is relatively insensitive to turns when walking and has difficulty in estimating distances in virtual worlds (see Steinicke 2016, 59–86). Walking straight ahead blindfolded or wearing a VR headset usually ends up with the respondent walking ahead and slightly to the right or left without realising. These observations are used for the construction of physical-digital VR environments, especially when the physical walking area is limited compared to the virtual expanse. The headset wearer is then physically led around a corner, while she believes she is walking straight ahead in the virtual world. Currently, a radius of about 22 metres is still required so that the headset wearer does not realise that she is actually walking around in a circle (see *ibid.*, 77).

A typical spatial configuration that permanently diverts walking is the *Unlimited Corridor*, which engineers and computer scientists at the University of Tokyo developed in cooperation with the US company Unity Technologies in 2016 (see Matsumoto et al. 2016a and 2016b). In this spatial installation, the headset wearer constantly touches the corridor wall with one hand to enhance the credibility of the virtual environment (» *Fig. 5*).

Virtual forks and intersections are physically recreated with an additional corridor in the middle. *The Void* also uses the principle of *redirected walking*. Chief illusionist Curtis Hickman developed a comparable infinite corridor for the VR arcade (see » *Fig. 4*). If several headset wearers are using the system simultaneously, they are directed via motion sensors and images to ensure that they do not walk into each other. Virtual doors act as barriers. A multidirectional variant of the *Unlimited Corridor* is the so-called *VirtuSphere*, which was originally used by the US military for training purposes (» *Fig. 6*).



Fig. 5 Keigo Matsumoto & Team, *Unlimited Corridor*, University of Tokyo.

Fig. 6 *VirtuSphere*, Mounted Warfare TestBed at Fort Knox, Kentucky.

This is an accessible rotating sphere three metres in diameter, mounted on rollers. Whoever steps into it can walk in all directions without moving from the spot. With the help of a head-mounted display, the test subjects are transported into virtual worlds in which they can move freely. Sensors under the sphere register each step and transmit this to the display. Seen in this light, the sphere is a huge controller that can be operated with your feet. Three of these spheres are located in a casino in Las Vegas, and one sphere is located at the University of Bremen in the Department of Cognitive Neuroinformatics for the purposes of research into human orientation in virtual and physical spaces (see Cognitive Neuroinformatics 2016). This experimental system is also based on the assumption that the shown VR user can orientate himself best in unknown virtual worlds when he receives as many sensory impressions as possible. In addition to the feeling of walking and the image in front of the eyes, sounds and smells are then added. The type of moving ball is determined by an ideology that assumes that spatial perception and spatial movement follow the sensory impressions. The current physical-digital VR settings in the gaming and interactive entertainment industries are shaped by this idea. It is all the more astonishing how little the material and haptic properties of the real built space and the physical things are taken into account in such settings.

Haptic Seeing

The handling of haptic feedback in advanced VR applications reflects the polarisation of debates on the sense of touch both in European philosophy and in its scientific research (see Harrasser 2017, 8–9). On the one hand, touch is devalued in favour of sight and subordinated to it, assuming that the sense of touch is linked to a multitude of affect modulations and that touch evokes particularly violent, uncontrolled reactions. On the other hand, a kind of touch metaphysics—in this context Jacques Derrida refers to “haptocentric metaphysics” (2000, 179–80)—in which the sense of touch has a privileged position in terms of access to reality. The sense of touch is reflexively associated with authenticity. Touch functions as a last instance of certainty, in the sense that what touches me is real. The new devices also tie in with this promise of reality: in order to increase the degree of reality of a 3D environment experienced through virtual reality glasses, American manufacturer Microsoft recently developed the *Haptic Revolver* (see Whitmire et al. 2018). With this handheld device, a display carrier in a virtual poker game can sense different materials from playing cards to plastic markers to felt carpets (» Fig. 7).

As seen here, the *Haptic Revolver* contains a small wheel that rotates and is covered with various material textures. When the display carrier virtually reaches for a playing



Fig. 7 Virtual reality handheld controller
Haptic Revolver by Microsoft, 2018.

card, the wheel rotates with the matching material under his index finger, giving the player the impression of touching a physical playing card that slides across a table surface. The movement is thus shifted from the hand to the material and the touch sensation is only imprecisely reproduced.

The preference for imagery over materiality goes even further: With novel haptic feedback systems, the tactile-haptic properties of an object are decoupled from its physical form and materiality and transferred into air pressure pulses or ultrasonic signals. In combination with a gesture control system, the *AIREAL* device from Disney Research, for example, enables the headset wearer to be touched by virtual objects in space—such as a butterfly projected onto the wearer's virtual arm (see Sodhi et al. 2013, 7; Rupert-Kruse 2018, 203–5). In order to evoke these haptic sensations, air vortices are produced within the device, which are shot at users with differing intensities, ranges and sizes (» Fig. 8).

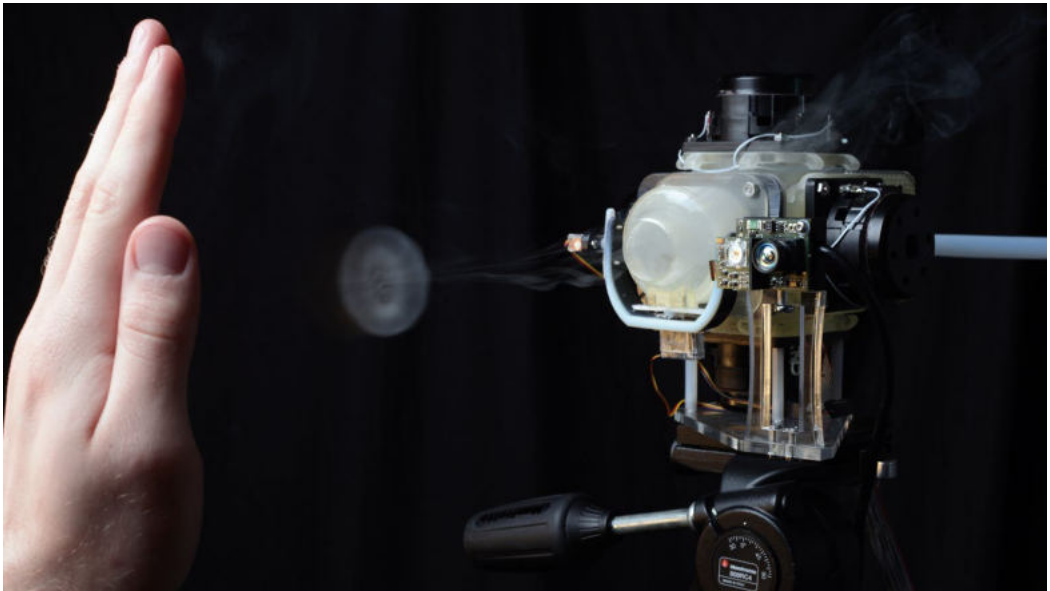


Fig. 8 The *AIREAL* device emits a ring of air called a vortex, which can impart physical forces a user can feel in free air, 2013.

“An air vortex is a ring of air that typically has a toroidal shape and is capable of travelling at high speeds over large distances. Unlike laminar airflow, which quickly disperses, a vortex is capable of keeping its shape and form” (Sodhi et al. 2013, 3). In contrast, *UltraHaptics* enables haptic feedback via ultrasound (see Carter et al. 2013, 2–4). When the user guides a hand over an array of small loudspeakers, she thinks she feels three-dimensional surfaces. The small loudspeakers send specific ultrasonic signals that are perceived as slight vibrations on the skin. The claim of such technologies is to increase the degree of reality of what is being represented. But what kind of perception of reality is drawn when the tangible virtual objects and surfaces offer no haptic resistance? Instead of intensively interweaving the pictorial and the material, the physical diffuses into the virtual for the benefit of a performance that permanently reconfigures the potential relationship between physical and virtual reality.

Sense of Being Here

The widespread practice of centring the action in virtual realities on seeing, which is merely intensified by appropriate tactile impressions, proves to be too schematic. The superficial privileging of seeing fails to recognise the manifold intertwining of sensory impressions as well as the provocative effect of the sense of touch (see Harrasser 2017, 8–9). It leads to the development of very simplistic ideas about the interplay between physical and virtual perceptions. What is of interest here, however, is the potential of the haptic and tactile to create complicated and polyvalent relationships.

The fact that experimental tactile studies in early twentieth century art addressed the sense of touch as a *mediator* of the senses is the motivation to draw on them here (see Höfler 2019). It is no coincidence that Microsoft's *Haptic Revolver* is reminiscent of the rotating tactile drum that Rudolf Marwitz designed in 1928 in the preliminary course at the Bauhaus in Dessau (» Fig. 9).

It was above all Bauhaus master and photographer László Moholy-Nagy who used specially designed tactile boards and wheels to train haptic skills (see 1929, 21–32). With the fingers, the materials arranged on them could be distinguished according to their surface texture, whereas differentiation with the eyes was difficult (» Fig. 10). By grasping and feeling, a microstructural idea of things and materials could be gained, which seemed to be denser and more precise than any visual representation.

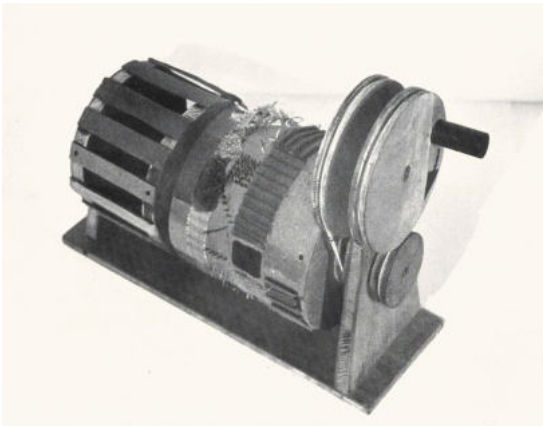


Fig. 9 Rudolf Marwitz (Bauhaus, 2nd term), Rotating tactile drum, 1928.

Fig. 10 Thomas Flake (Bauhaus, 2nd term), Tactile table in four rows of sandpapers, and corresponding diagram, 1928.

In such tactile experiments, the hand functions as a medium of recognition, exploration, and experience, thus contesting the eye's traditional primacy of perception and knowledge. This perspective captures materials and structures not as static forms of perception but as elements of experienced continuities. The fabric panels deliberately blur the distinction between optics and haptics and allow a form of tactile image to emerge. The touching feel and the feeling sight reinforce the belief in the reality of things and images.

The developers of haptic technologies for virtual environments also take this presence-giving power of touch as their starting point. However, the tactile studies at the Bauhaus aimed at designing sensory realities, whereas most VR applications deliberately try to cause sensory delusions. The construction of virtual illusions is still characterised by a traditional hierarchy and fragmentation of senses: the recipient wearing the headset subordinates the physical sensation to the virtual forms of vision.

With this in mind, the design experiments from Moholy-Nagy's preliminary course offer an almost subversive program. For they focus not only on a mobilisation of all sensory modalities but also on an act of perception in which the traditional hierarchy of senses is called into question. With such an abandonment of the hierarchy of senses, a productive reorientation of virtual design can also take place: away from the compulsion to produce a deceptively real representation of reality and towards the attempt to enable an immediate communication between bodies and materials that simultaneously reveals their mediation. In this paradigmatic shift, approaches that explicitly avoid polarisation and instead work out the medial character of the sense of touch move towards the centre of attention. In this process, not only the material but also the skin as a medium comes into focus—the skin, which makes contact with the physical and virtual world by forming a border to it, which stretches out to capture signals (see Harrasser 2017, 7). An approach designed in this way enables means of dealing with physical-material things in VR settings that sees them not merely as passive carriers of meaning or mute witnesses of visual representation but that acknowledges their bulkiness and their own life. Then, the sense of touch can also be an impetus and provocation of unexpected haptic experiences that deform intentional, purposeful action and produce deviations (see Rheinberger 2016, 42, 45, 64). In this perspective, the space of seeing is first generated as the space of touch.

In light of the tentative and experimental character of the sense of touch, the question also arises as to which alternatives to bodily immersion in 3D spaces can be developed. Which media strategies in dealing with virtual reality can there be that undermine submersion in immersive environments and thus provide transparency about the techniques that users are succumbing to? How can fragmentation be dealt with even within an immersive environment? Such strategies of infiltrating and breaking are based on a way of thinking that aims to overcome traditional opposites between body and mind and interprets sensory perceptions neither in an individualistic-hierarchical

nor in a collectivistic-holistic way. In this perspective, seeing, hearing, and feeling are not understood as naturally given abilities but as medial practices (see Ochsner/Stock 2016, 9). Such an approach requires different models and narratives of the physical and material design in VR settings than those that only see image carriers or perception amplifiers in it. Haptic architectures and objects must be conceived and designed that do not permanently confirm the characteristic experience of being within a virtual environment (*sense of being there*) but rather invalidate it by creating a sense of being present in physical space (*sense of being here*). In this way, they could produce perceptions and meanings beyond the moving images of the displays, which the recipient would first have to interpret in relation to the perceived 3D spaces; and which would not constantly rely on affirmation and affective impact but on disturbance and doubt. What is needed, then, is a design of the physical-virtual that is “intolerant of unambiguity” (Harrasser 2017, 12).

Figures

Fig. 1, 3: Photo by Norbert Miguletz (Frankfurter Kunstverein 2017).

Fig. 2: Screenshot by Toast VR 2016.

Fig. 4: Photo by Tom Connors 2015. Accessed January 1, 2020. <https://www.theverge.com/2016/7/1/12058614/vr-theme-parks-disney-six-flags-the-void-ghostbusters-virtual-reality>.

Fig. 5: Photo by Unlimited Corridor Team 2016. Accessed January 1, 2020. http://www.cyber.t.u-tokyo.ac.jp/~matsumoto/image/uc/uc_web.jpg.

Fig. 6: Photo by Paul Monday 2007. Accessed January 1, 2020. <https://en.wikipedia.org/wiki/VirtuSphere#/media/File:Virtusphere.jpg>.

Fig. 7: Photo by Microsoft 2018. Accessed January 1, 2020. <https://www.microsoft.com/en-us/research/publication/haptic-revolver-reconfigurable-virtual-reality-controller>.

Fig. 8: Photo by Rajinder Sodhi/Disney Research (Sodhi et al. 2013, 1).

Fig. 9, 10: Photo by Clasen/Dessau (Moholy-Nagy 1929, 25, Fig. 5 and 28, Fig. 8).

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Dreaming in the Witch House

An Esoteric Approach to Computer Game Research

Thomas Hawranke

Abstract The following text is a shortened transcript of my lecture performance *Dreaming in the Witch House*, which centres around the narration *The Dreams in the Witch House* written in 1932 by American author H. P. Lovecraft. The lecture focuses on the theme of research in which the architecture of Lovecraft's witch house serves as a catalyst for different strategies to find the hidden and the unexpected. By combining the efforts of Lovecraft's characters with different unpredictable player behaviour in video games, the lecture argues towards an idea of esoteric computer game research. Within the lecture situation, Lovecraft's text fragments were played back in audio. The pre-recorded female voice served both as a narrator and as a dialogue partner.

Keywords Artistic research, computer game research, game space, play behaviour, glitching, H. P. Lovecraft

The Fear of the Unknown

He was in the changeless, legend-haunted city of Arkham, with its clustering gambrel roofs that sway and sag over attics where witches hid from the King's men in the dark, olden days of the Province. Nor was any spot in that city more steeped in macabre memory than the gable room which harboured him—for it was this house and this room which had likewise harboured old Keziah Mason, whose flight from Salem Gaol at the last no one was ever able to explain (Lovecraft and Joshi 2004, 300).

The following thoughts will circulate around the geometry and architecture conjured by H. P. Lovecraft in his short story *The Dreams in the Witch House* written in 1932



Fig. 1 Representation of the witch house in the CryEngine Sandbox Editor.

(2004, 300–34). The witch house, with its oppressive atmosphere, the oblique angles, its areas of insecurity and safety shall serve as a starting point, as a place of transition for knowledge, as a place of banned knowledge, as a place that stimulates travelling through space and dream time.

The witch house is a laboratory, an alchemical kitchen in which the protagonist explores the unknown. “The new is uncertain, it is by definition not predictable, so it can only be evoked to a limited extent. What is really new has to happen, and conditions have to be created for it to happen” (translated from German by the author, Rheinberger 2007).¹

Nevertheless, the unknown is associated with fear. We do not know it and contrary to the scientific laboratory, with its controllability and reproducibility, these fears influence the premises of the witch house and our individual perception. “Fear makes the future uncertain” (Hull 2006, 12). However, it also drives research: We have to foster our courage and dare to do something in order to overcome our own fear and explore this situation.

1 “[...] was wirklich neu ist, ist definitionsgemäss nicht vorhersehbar, es kann also auch nur begrenzt herbeigeführt werden. Was wirklich neu ist, muss sich einstellen, und man muss Bedingungen dafür schaffen, dass es sich einstellen kann” (Rheinberger 2007).

Gilman could not have told what he expected to find there, but he knew he wanted to be in the building where some circumstance had more or less suddenly given a mediocre old woman of the seventeenth century an insight into mathematical depths perhaps beyond the utmost modern delvings of Planck, Heisenberg, Einstein, and de Sitter (Lovecraft and Joshi 2004, 301).

The witch house exists on the threshold of the twentieth century and during this time, the British scientist Lord Kelvin claims that in physics there is nothing left to be discovered (Paul Davies, *Superstring: A Theory of Everything?* from 1988, quoted in Ingwersen 2014, 46). This sentiment of absolute certainty, of having penetrated a discipline or the world entirely, stems from a time when things were fundamentally changing, especially in the natural sciences. Albert Einstein's theory of relativity expanded Cartesian space by a fourth dimension. The curvature of space through space-time broke radically with Euclidean geometry. At the same time, other mathematicians were introducing counter models to established theories: János Bolyai's *hyperbolic geometry*, or Nicolai Lobachevsky's and Bernhard Riemann's *differential geometry* provided counter evidence for Euclid's long-standing assertions. These scientific discoveries caused the field of mathematics to diverge into two paths: one being the familiar with numerous already existing explications, the other one opening a gateway to the unknown, a field yet to be researched. Within that second path, we are not at the end but at the very beginning of our journey.

For the layman, the multiple ideas of space-time may appear difficult to grasp, given that scientific languages favour the initiated. This discourse problem further alienates the scientific realm from everyday life. New findings or methods, which already seem strange to other researchers, are mystified in the perception of the non-scientific population. Mathematics, or at least its field of research, questions the fundamentals of our existence. It is an omnipresent horror that is not bound by any dimensions and rather travels through them until it finally knocks on the door of our witch house.

"According to this logic, the sensation of terror experienced in face of the deformed, the infinite, or the supernatural, stems from an epistemological crisis, an incapacity to make sense" (Ingwersen 2014, 46). Therefore, the witch house is on the threshold to something different, a liminal place where the parallels of different spaces and times meet. The unknown and the new calls for us and wants to be explored—no matter how high the costs. We now enter the witch house, get an impression of its architectural condition, its angles and corners, the creaking of its boards and of the hidden, the secret and the unknown that dwell within.

Gilman's room was of good size but queerly irregular shape; the north wall slanting perceptibly inward from the outer to the inner end, while the low ceiling slanted gently downward in the same direction. Aside from

an obvious rat-hole and the signs of other stopped-up ones, there was no access—nor any appearance of a former avenue of access—to the space which must have existed between the slanting wall and the straight outer wall on the house’s north side, though a view from the exterior shewed where a window had been boarded up at a very remote date (Lovecraft and Joshi 2004, 302).

The Witch House

In Lovecraft’s *Dreams in the Witch House*, it is the title-giving building that acts as a catalyst of knowledge. The witch house puts the main character Gilman in a state of delirium. In feverish visions, he dreams himself into the dreamlands, a place that can only be entered by dreaming, as it is disconnected from our world. As in Lovecraft’s earlier stories, it is this ability that allows his characters to travel through space and time. Gilman’s witch house and study room hold unimagined knowledge, but the dark aura of the architecture also has a threatening effect on his mind. It is in this fragile state that Gilman begins to dream. His fears are only surpassed by the irrepressible drive for knowledge.

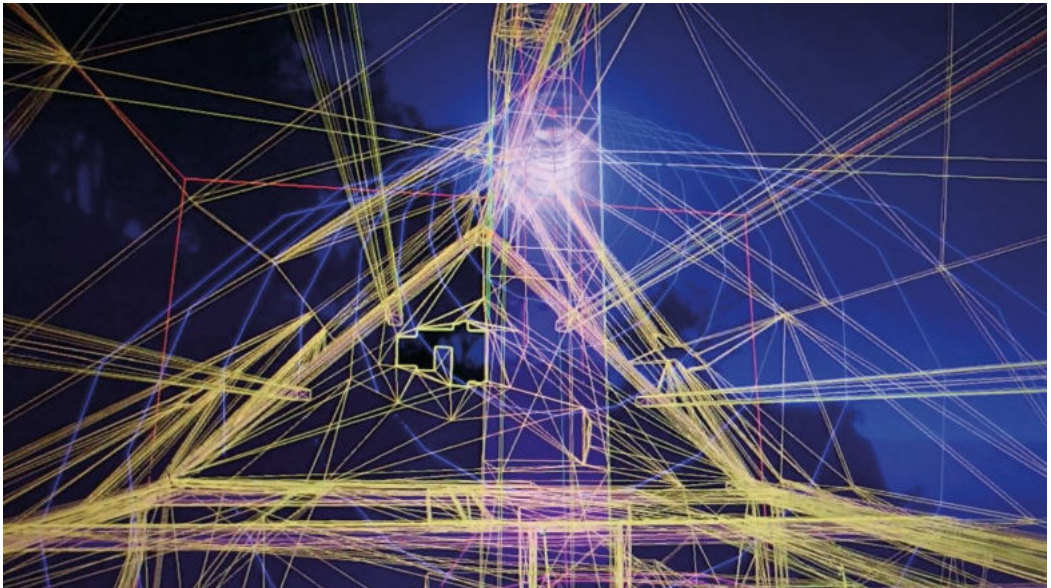


Fig. 2 The gable of the witch house.

The witch house is an unsafe territory. If home is supposed to provide security, the witch house seems like a permanent threat to the protagonist. Lovecraft's characters do not find access to the unknown in comfort and security, but in the permanent uncertainty of whether one is awake or dreaming, of being and non-being, of sense and madness. This uncertainty is transported to the reader by the language used. The mathematician Thomas Hull describes it as follows: "Lovecraft's cosmic horror was thus achieved through devices that would, he hoped, feel completely foreign and unknown to the reader. This mood was meant to be crafted in unfamiliar and uncomfortable territory [...]" (Hull 2006, 10).

The protagonist's search for knowledge—in the story described as an urge to the stars, as a feverish advance or as overcoming one's own fears—is placed alongside the reader's advance within the storyline. The search for the new, for a new topography, for a new mathematics, for a final truth or the end of history and sometimes also for the clarity of one's own mind is the driving force behind Lovecraft's stories.

The scientific historian Hans-Jörg Rheinberger describes an exoteric and an esoteric way of how artists work within the concealed space of the scientific laboratory. Esoteric in this context refers to artists appropriating the materials within the lab, such as images, sounds, objects and so forth. In this situation, scientists become mere spectators—there is no epistemic or aesthetic exchange between art and science. The esoteric way, on the other hand, tries to extract effects from the existing material. Therefore, artists and scientists design and construct setups together to overcome the resistance of the material. They build situations from which something new can emerge, whereby the new is not foreseeable—and therefore addresses the unknown in a dream-like process (Rheinberger 2015, 311–14).

In Gilman's esoteric research approach, he tries to overcome the resistance of the architecture and its dark aura. Gilman is looking for something without knowing what it is. He exposes himself to the influence of the witch house. Gilman's unyielding and insistent gaze at all the nooks and crannies of the interior finally reveals the transition to a deep-seated insight.

As time wore along, his absorption in the irregular wall and ceiling of his room increased; for he began to read into the odd angles a mathematical significance which seemed to offer vague clues regarding their purpose. Old Keziah, he reflected, might have had excellent reasons for living in a room with peculiar angles; for was it not through certain angles that she claimed to have gone outside the boundaries of the world of space we know? His interest gradually veered away from the unplumbed voids beyond the slanting surfaces [...] (Lovecraft and Joshi 2004, 303).

In *The Poetics of Space*, the French philosopher Gaston Bachelard dedicates one complete chapter to the corner. He writes:

[E]very corner in a house, every angle in a room, every inch of secluded space in which we like to hide, or withdraw into ourselves, is a symbol of solitude for the imagination; that is to say, it is the germ of a room, or of a house. [...] a corner that is 'lived in' tends to reject and restrain, even to hide, life. The corner becomes a negation of the Universe. In one's corner one does not talk to oneself. When we recall the hours we have spent in our corners, remember above all silence, the silence of our thoughts. This being the case, why describe the geometry of such indigent solitude? (Bachelard 1994, 136–37).

Contrary to Bachelard's description, the corner in the study room of the witch house becomes the centre of Gilman's meditation on inverse geometries and thus the theory of relativity, the science, and the occult that are nested within. In Lovecraft's earlier stories, these geometric forms already come to life and serve as vehicles of indeterminacy and unimaginability. Lovecraft's corners hypnotise and swallow the viewer. Following Bachelard, the corners become something tangible.

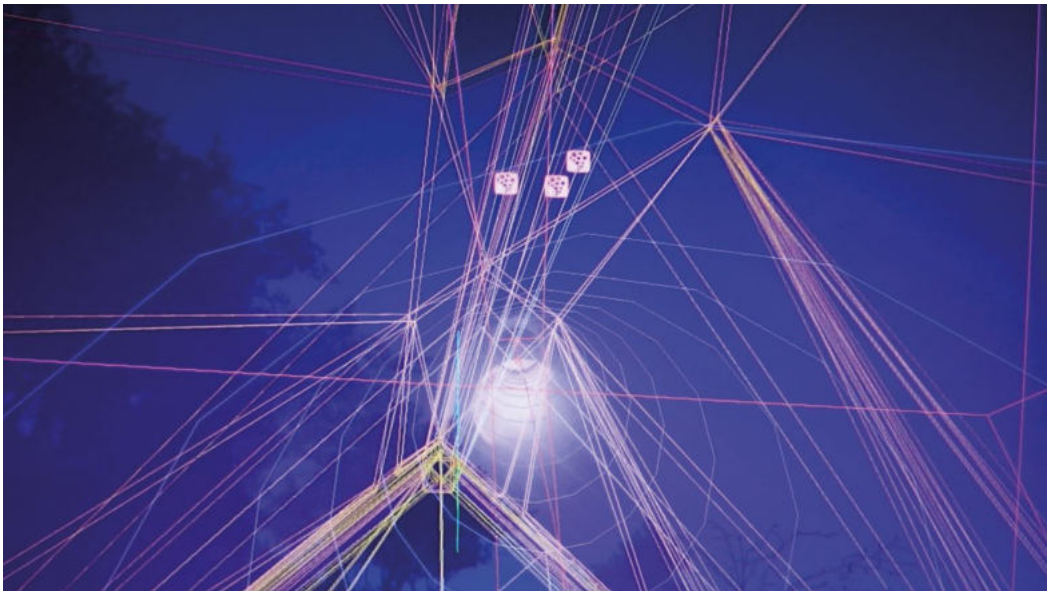


Fig. 3 Zoom-in onto the corner of the gable.

The touch of brain-fever and the dreams began early in February. For some time, apparently, the curious angles of Gilman's room had been having a strange, almost hypnotic effect on him; and as the bleak winter advanced he had found himself staring more and more intently at the corner where the down-slanting ceiling met the inward-slanting wall (Lovecraft and Joshi 2004, 303).

The corners of the witch house connect fragile borderlines between the world we know and the unknown. In order to overcome its materiality on this side, dream techniques are needed. Gilman's urge to move into the angle—in other words, to create a transcendent transition by concentrating on geometric forms—is told in fragments. In fact, Gilman himself cannot say with certainty whether he has not already entered the angle and just does not remember the experience. If Lovecraft's characters cross this threshold, the new dimensions reveal themselves. However, it is often unclear how they can leave these angles again, as Bachelard writes: "But there are angles from which one cannot escape" (1994, 144).

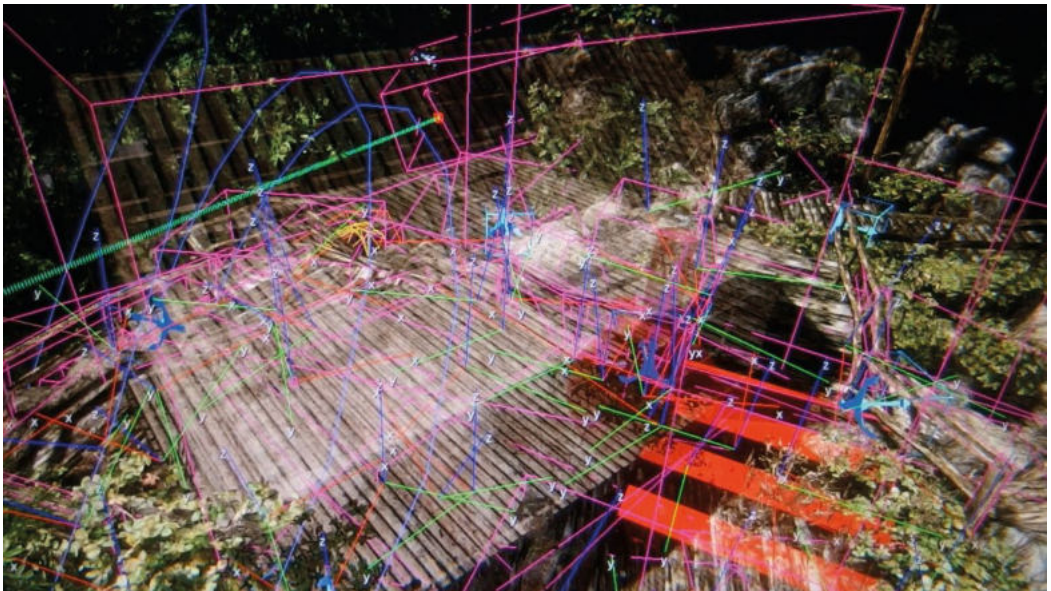


Fig. 4 Exterior view of the witch house.

The Dreamland

“From the depths of his corner, the dreamer sees an older house, a house in another land, thus making a synthesis of the childhood home and the dream home” (Bachelard 1994, 142). The geometry of the witch house becomes a powerful actor within the story as it induces a feverish feel in Gilman’s body and stimulates his dreams. In Lovecraft’s stories, the characters transfer their minds into alien bodies of non-human beings. The dissolution of one’s own body in feverish dreams makes it possible to overcome the boundaries between dimensions and bodies, enabling an alienating experience.

Gilman’s dreams consisted largely in plunges through limitless abysses of inexplicably coloured twilight and bafflingly disordered sound; abysses whose material and gravitational properties, and whose relation to his own entity, he could not even begin to explain. He did not walk or climb, fly or swim, crawl or wriggle; yet always experienced a mode of motion partly voluntary and partly involuntary. Of his own condition he could not well judge, for sight of his arms, legs, and torso seemed always cut off by some odd disarrangement of perspective; but he felt that his physical organisation and faculties were somehow marvellously transmuted and obliquely projected—though not without a certain grotesque relationship to his normal proportions and properties (Lovecraft and Joshi 2004, 304).

In Lovecraft’s narratives, only dreaming can lead to an understanding of non-Euclidean geometry. Dreaming itself becomes a science, the change between waking and sleeping phases merges into a methodical symbiosis that makes actual travel through space and time possible. The characters travel to distant places to gain knowledge and thus a better understanding of the world they originate from. They go on research trips from the corners of the witch house, to the snowcapped peaks of the mountains of madness, and to the depths of the seabed in the nightmare corpse city of R’lyeh. In one of his dream expeditions, Gilman sees a vast jungle landscape after entering. He himself is standing on top of a building. Everything he sees and hears is unfamiliar, with three suns shining above his head.

When Gilman stood up the tiles felt hot to his bare feet. He was wholly alone, and his first act was to walk to the balustrade and look dizzily down at the endless, Cyclopean city almost two thousand feet below. As he listened he thought a rhythmic confusion of faint musical pipings covering a wide tonal range welled up from the narrow streets beneath, and he wished he might discern the denizens of the place. The sight turned him giddy after a while,



Fig. 5 Shot from under the map in *Grand Theft Auto V* (OoB 2018, Thomas Hawranke).

so that he would have fallen to the pavement had he not clutched instinctively at the lustrous balustrade. His right hand fell on one of the projecting figures, the touch seeming to steady him slightly. It was too much, however, for the exotic delicacy of the metal-work, and the spiky figure snapped off under his grasp. Still half-dazed, he continued to clutch it as his other hand seized a vacant space on the smooth railing (Lovecraft and Joshi 2004, 314).

The dream ends abruptly, and Gilman finds himself soaked in sweat in his bed back in the witch house. Sometime later, he finds the said figure under his bed. It has also survived the journey through space and time. Gilman demonstrates the artefact to the scientific community but they fail to find answers to his queries. Only the dreamer knows about its origin, the conventional science with its established procedures and static methods cannot provide any answers. Travels through the dreamlands are expeditions into the unknown. They are field trips to distant planets, into different dimensions or into alternative temporalities of our planet. On these expeditions, we encounter strange fragments of unfamiliarity. We must discard the familiar. Only by following our impressions and our intuition can we discover the new, step by step.

Witch House Exits as Transgressive Play Behaviour

We must build our own witch houses as precautions to summon unforeseeable events, as generators of surprises and as future-producing machines: “Each artist works in the dark and is guided only by the tunnels and shafts of earlier works, following a vein in the hope of discovering a gold mine. At the same time, however, he must fear that the vein may already be exhausted tomorrow” (translated from German by the author, Rheinberger 2007).² Thus, esoteric research could perhaps reach into the future by neglecting the existing tunnels and shafts of earlier works and instead forge new paths within our own mine. It is less a matter of following the beaten tracks of the past than of entering the past through the corners of our witch houses and exploring new exits into the present and the future.

At this point, I would proclaim the idea of esoteric research for the field of video games. We should create our own witch houses within game spaces, meditate in the corners of their architecture and stroll through their landscapes without purpose. Now, in order to further illustrate my ideas, I would like to sketch three possible witch house exits as examples.

Amnesia

One of these exits takes us on expeditions in which we do not follow the narrative of the game, nor do we surrender to atmospheres and immersive effects of the game world. Computer games try to lure us into their designed events, to get us to care about objects, people, architectures and landscapes. But we should not care. Rather, the *holy earnest* of play (see Huizinga 1980, 20) is replaced by the irrepressible urge to find something new, to evoke things no player has ever seen before. The desire for the unknown, the urge for exploration, creates a momentum that pulls us onto unpaved paths, leads us to the periphery and allows us to look at distant and unfinished landscapes of every game world.³

A landscape without content. We fly through handles, coordinate crosses, placeholders, trigger boxes, collision checks, and over the grid of the level architecture. In this world, all connections to its content have been cut. Where once plants and trees stood, only white spheres can be seen now. The materiality of the world has been

2 “Jeder Künstler arbeitet im Dunkeln und wird nur von den Tunnels und Schächten früherer Werke geleitet, während er einer Ader folgt in der Hoffnung, auf eine Goldgrube zu stoßen. Gleichzeitig aber muss er fürchten, dass die Ader schon morgen ausgeschöpft sein kann” (Rheinberger 2007).

3 Regarding the structural constitution of the game world and the idea of prospect pacing, see also Bonner’s chapter in this book.

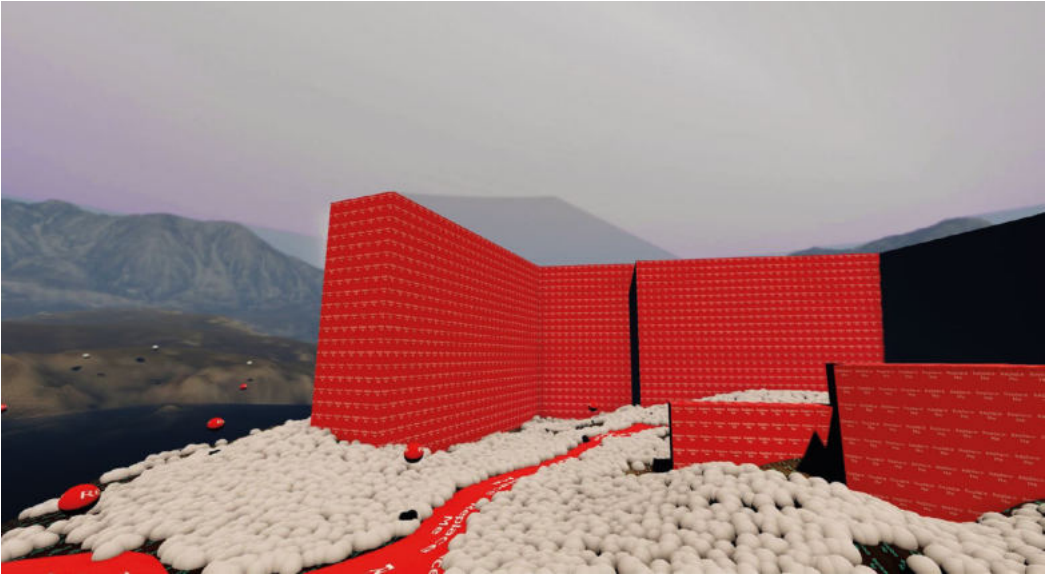


Fig. 6 Level architecture, where the link to the content layer is erased (*The grid, the lib and the best of all possible worlds 2019*, Thomas Hawranke).

replaced by the demand to replace it. This landscape is cut loose of its database linkages, from objects, scripts, and textures. In this absence, things emerge that have been obscured but are nevertheless essential components of it. In such a way, the structure of the game world is liberated from its ludic boundaries, from its gameplay-driven sign system. Through this alternative perspective onto the familiar, we find new things, new starting points and new angles to lose ourselves in.

Meditations

Applying the second exit, we concentrate on geometries, angles, and on our speed. The beat of the machine rhythmises. If we hit the angles of the polygons with an arrhythmic tempo, we succeed in making the transition. We see the world from the outside, the perspective of the designer. With just one step we break through walls, mountains, and floors, float in the air or stand on textureless topography. We walk along the underside of the world or look into the void. Entering these angles makes them experienceable. We use it to our advantage, we shorten, we skip, we cause mistakes.

The abysses were by no means vacant, being crowded with indescribably angled masses of alien-hued substance, some of which appeared to be organic while others seemed inorganic. A few of the organic objects tended to awake vague memories in the back of his mind, though he could form no conscious idea of what they mockingly resembled or suggested. In the later dreams he began to distinguish separate categories into which the organic objects appeared to be divided, and which seemed to involve in each case a radically different species of conduct-pattern and basic motivation. Of these categories one seemed to him to include objects slightly less illogical and irrelevant in their motions than the members of the other categories (Lovecraft and Joshi 2004, 304).

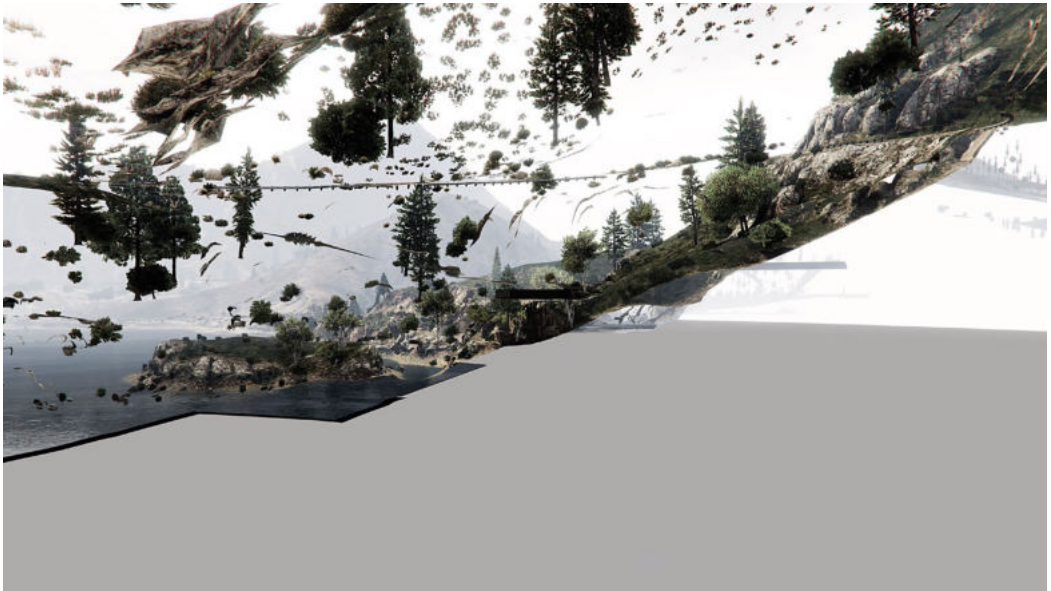


Fig. 7 Out of bound space in *Grand theft Auto V* (OoB 2018, Thomas Hawranke).

Gable Jumping

In order to enter the corners of our witch house, we have to develop alternative forms of spatial practices in computer games. This could be a third exit. Sometimes it is the direct way, sometimes a backward movement. Actions like *Strafe-jumping* or *Accelerated Backhopping* annihilate the game physics and let us explore the boundaries of game mechanics and game worlds:⁴

Accelerated Back Hopping (ABH for short) is a Glitch, and it's the main method of movement on OrangeBox Engine-based games. [...] When your speed is over the limit, by default the game assumes you are always moving forward so the game accelerate you backwards to reduce your speed down to the threshold. However if you are moving backwards when the game bounds your speed, the game will try to slow you down by adding backward speed,

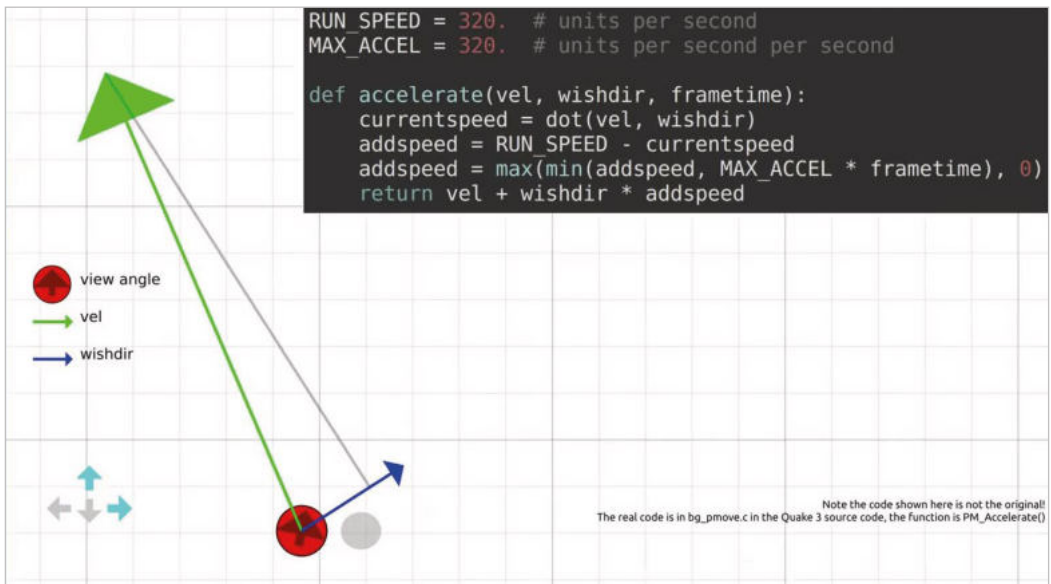


Fig. 8 Explanation of *Strafe-jumping* as part of the *Accelerated Backhopping* movement (screenshot taken by the author, Matt's Ramblings 2018).

4 *Strafe-jumping* and *Accelerated Backhopping* are specific spatial practices developed by players that use errors in the physical calculation of the video game to gain a benefit.

consequently accelerating you. [...] (T)he amount of backward speed the game applies on you is based on your speed when you jump, so the faster you go, the more speed you'll get. [...] Jump forward, turn around in the air and jump right as you land. It's recommended not to hold S or W (or your respective keys for moving forwards and back) while ABHing. Binding +jump to mouse wheel or using a jumping script is recommended as it makes timing jumps a lot easier (Source Runs Team 2018).

Esoteric Computer Game Research

One could understand esoteric computer game research as an approach similar to the research of Lovecraft's characters: In order to find something new, we have to create an unfamiliar and uncertain surrounding, exchange the comfort of our home for the menacing angles of the witch house gable. In this agitated state of anxiety, our thoughts will not rest but resonate feverishly with the elements of the game world. Within this state of permanent motion, unthinkable and unspeakable things will hopefully surface from the depth. Esoteric computer game research cannot be restricted by norms and regulations, it should be wild and free and use all the resources that one can find. In

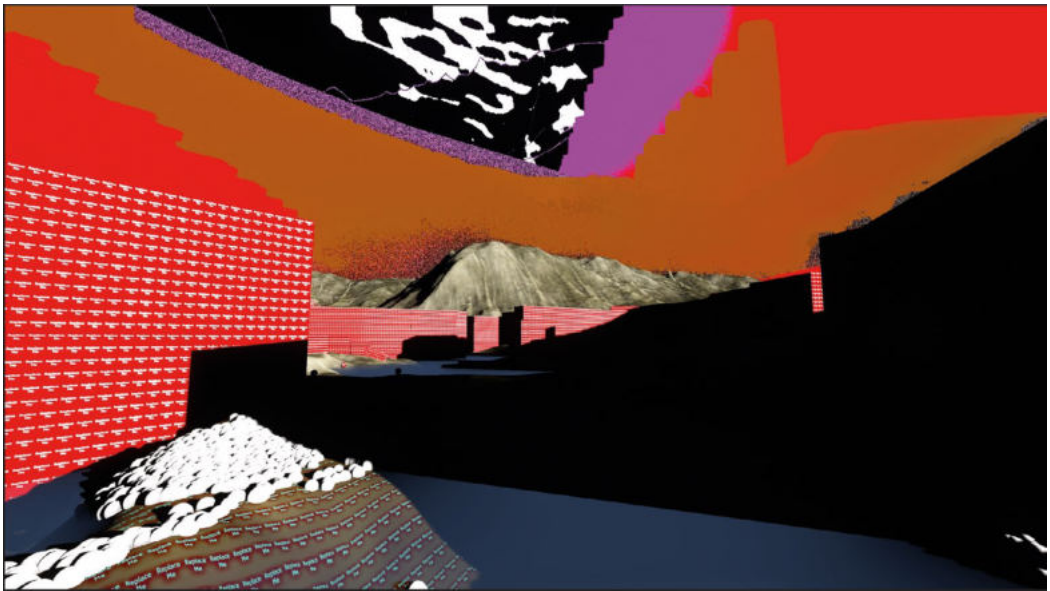


Fig. 9 Landscape glitch, after messing with the data of the CryEngine.

2003 already, Espen Aarseth proclaimed the idea to use everything we can find within video game research (2003, 7). According to him, it could generate knowledge where no one else dares to look. The potential lies not in disciplined research, like the adoption of methods and rules, but to quote Hito Steyerl, in epistemic disobedience and undisciplined research (2010). Hence, I propose that we should all go on research trips into the unknown, into the corners and architectures of the game worlds—into the inverse geometries of our own witch houses—and enter, linger, meditate, experience, accumulate and reflect.

Figures

Fig. 1–4: Screenshot and content by the author, 2019.

Fig. 5: *OoB* (Thomas Hawranke 2018).

Fig. 6: *The grid, the lib and the best of all possible worlds* (Thomas Hawranke 2019).

Fig. 7: *OoB* (Thomas Hawranke 2018).

Fig. 8: Matt's Ramblings. 2018. "Strafe-Jumping Physics Explained." In youtube.com, February 28. Accessed October 10, 2019. <https://www.youtube.com/watch?v=rTsXO6Zicls>.

Fig. 9: Screenshot by the author, 2019.

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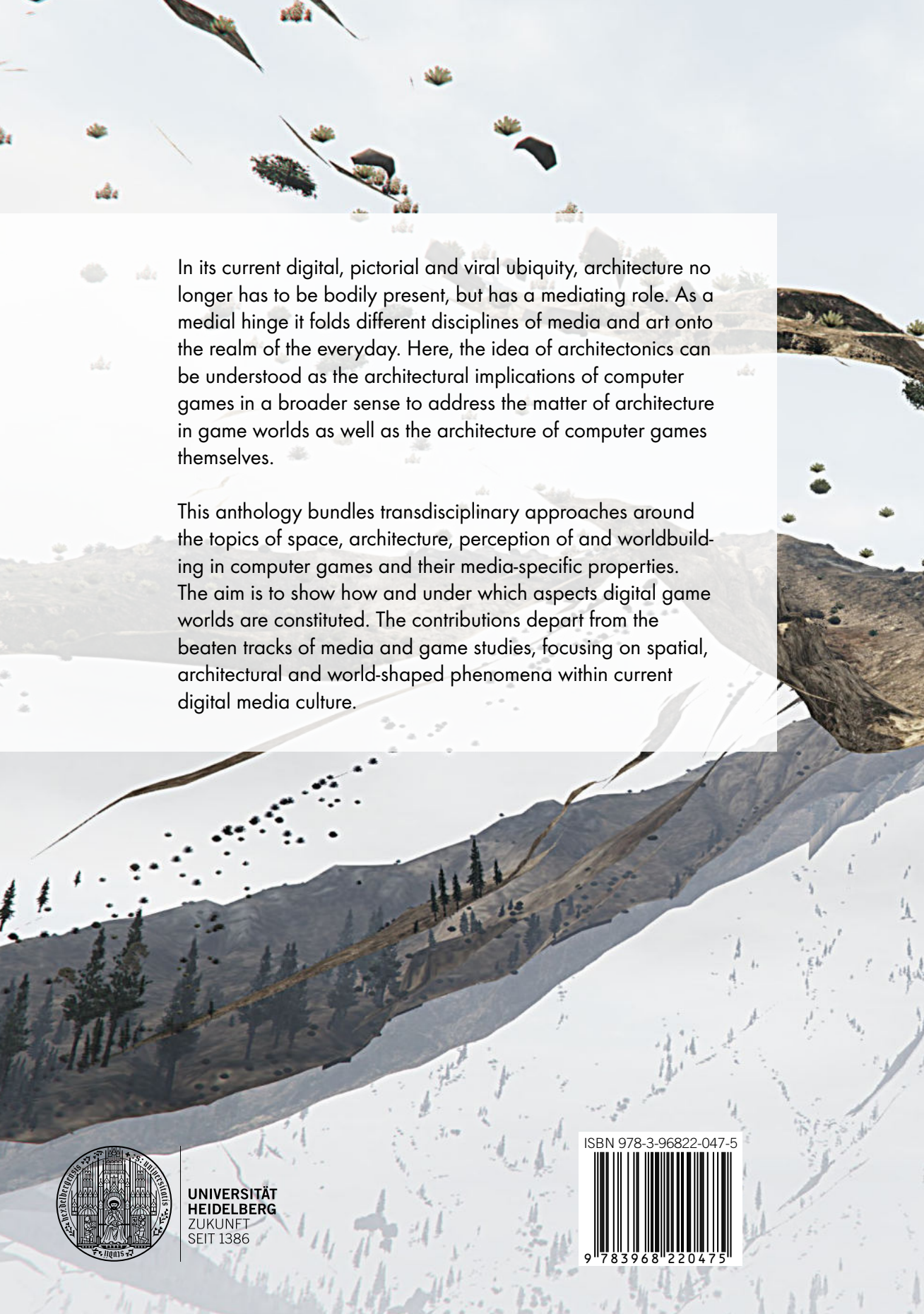
Her research interests include aesthetics and structure of game worlds as well as game mechanics invested with narrative or affective meaning. Apart from that, she is mainly concerned with the aesthetics and mechanics of horror video games in general and the idiosyncrasies of survival horror in particular, as well as (conventions of) horror across media.

Daniel Vella is a lecturer at the Institute of Digital Games at the University of Malta, where he teaches classes on the formal properties of digital games, player experience, and narrative in games. Following degrees in Communications and English literature at the University of Malta, he pursued his doctoral studies at the IT University of Copenhagen, obtaining his doctorate in 2015 with the title "The Ludic Subject and the Ludic Self: Analyzing the I-in-the-Gameworld." His research topics include the phenomenology of player experience, aesthetic theory and digital games, subjectivity, identity and being in virtual worlds, narrativity and fictionality in games, and the philosophy and poetics of game places. His work has been published in a number of international journals and edited volumes, including *Game Studies*, *CounterText*, *Journal of Virtual Worlds Research*, *Techné: Research in Philosophy and Technology*, and, recently, in *Ludotopia: Space, Place and Territory in Computer Games* (transcript 2019). He is the co-author of *Virtual Existentialism: Meaning and Subjectivity in Virtual Worlds* (Palgrave 2020). He is also active as a writer and narrative designer for board games, having most recently worked on *Posthuman Saga* (Mighty Boards, 2019).

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In its current digital, pictorial and viral ubiquity, architecture no longer has to be bodily present, but has a mediating role. As a medial hinge it folds different disciplines of media and art onto the realm of the everyday. Here, the idea of architectonics can be understood as the architectural implications of computer games in a broader sense to address the matter of architecture in game worlds as well as the architecture of computer games themselves.

This anthology bundles transdisciplinary approaches around the topics of space, architecture, perception of and worldbuilding in computer games and their media-specific properties. The aim is to show how and under which aspects digital game worlds are constituted. The contributions depart from the beaten tracks of media and game studies, focusing on spatial, architectural and world-shaped phenomena within current digital media culture.



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