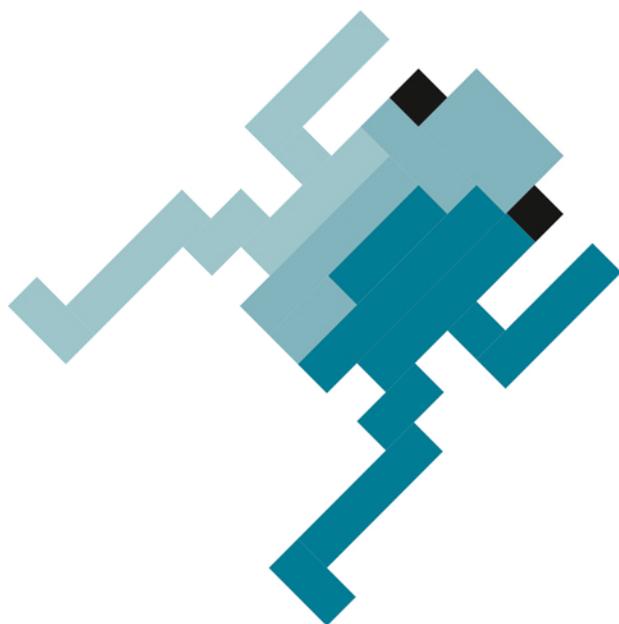


Emir Bektic, Daniela Bruns,  
Sonja Gabriel, Florian Kelle,  
Gerhard Pölsterl, Felix Schniz (eds.)

# MIXED REALITY AND GAMES

Theoretical and Practical Approaches  
in Game Studies and Education



[transcript] Media Studies

# From:

*Emir Bektic, Daniela Bruns, Sonja Gabriel, Florian Kelle, Gerhard Pölsterl, Felix Schniz (eds.)*

## **Mixed Reality and Games**

Theoretical and Practical Approaches in Game Studies and Education

November 2020, 296 p., pb., 10 B&W-ill.

39,99 € (DE), 978-3-8376-5329-8

E-Book:

PDF: 39,99 € (DE), ISBN 978-3-8394-5329-2

Videogames allow us to immerse ourselves in worlds that are reflective of cultural phenomena. At the same time, games are in the process of occupying and utilising the real world as a part of the game. The book provides a combination of theoretical and practical approaches to mixed reality through the lenses of game studies and pedagogy. These novel approaches invite the reader to rethink their conceptions of games and mixed reality. They are complemented with classical analyses of games and applications in educational contexts. In uniting theory and hands-on approaches, the book provides a broad spectrum that facilitates and inspires interdisciplinary thinking and work.

**Emir Bektic** (BA) is a student of the Game Studies and Engineering programme at Klagenfurt University.

**Daniela Bruns** (MA) until recently worked as a university assistant at Klagenfurt University and organizes the university's annual Game Pics Event. Her research focused on cultural studies, popular culture, and videogames.

**Sonja Gabriel** (Prof. Mag. Dr.) is a professor for media literacy at the KPH Vienna/Krems, teaching teachers in the use of digital media. Her research is focused on digital game-based learning and its teaching values.

**Florian Kelle** (BA) is student of the Game Studies and Engineering programme at Klagenfurt University. He is writing his master's thesis on archaeological approaches to videogames with a focus on object-oriented ontology and hyperobjects.

**Gerhard Pölsterl** (Mag.) works for the Austrian Federal Ministry of Labour, Family and Youth, focusing on media and pedagogy. He also teaches media-related courses at the University of Vienna and organizes the annual FROG conference.

**Felix Schniz** (MA) is director and co-founder of the Game Studies and Engineering programme at Klagenfurt University. He is writing his dissertation on the experiential dimension of videogames.

For further information:

[www.transcript-verlag.de/en/978-3-8376-5329-8](http://www.transcript-verlag.de/en/978-3-8376-5329-8)

# Contents

---

## Preface

<b>Federal Ministry of Labour, Family and Youth</b> .....	11
<b>University of Klagenfurt</b> .....	13
<b>KPH Vienna/Krems</b> .....	17

## Mixed Reality | Contributions to the 13th Future and Reality of Gaming Conference 2019 in Vienna

### Introduction to Mixed Reality and Games

*Emir Bektic, Daniela Bruns, Sonja Gabriel, Florian Kelle, Gerhard Pölsterl, and Felix Schniz* .. 21

## Mixed Reality | Design & Aesthetics

### An Introduction to Design & Aesthetics

*Florian Kelle and Felix Schniz* .....

31
----

### Warning: Not Suitable for Robots

A Human-Centric Game Design Approach

*Alexia Bhéreur-Lagounaris* .....

33
----

### Game Engineering for Hybrid Board Games

*Wilfried Elmenreich* .....

49
----

### Creating Digital Gamebooks with *Twine*

*Richard Hahn* .....

61
----

<b>Strategy Games as Neoliberal Historiography</b> <i>David Praschak, Stefan Ancuta, and Max F. Schmidt</i> .....	79
--	----

<b>The Flaneur in a Masticator</b> Virtual Walking and the Philosophical Experience in <i>Amnesia: A Machine for Pigs</i> <i>Felix Schniz</i> .....	89
---	----

<b>Cortana: A Digital Personal Assistant between Space Opera and Speech Recognition</b> <i>Rudolf Inderst and Pascal Wagner</i> .....	101
--	-----

<b>Is This the Real Life? Is This just Fantasy?</b> Alternate Reality (Games) Polliwog 2019 <i>Michaela Kempter</i> .....	111
---	-----

## **Mixed Reality | Society & Culture**

<b>An Introduction to Society &amp; Culture</b> <i>Emir Bektic and Gerhard Pölsterl</i> .....	123
--	-----

<b>Players Unite Legally</b> <i>Katharina Bisset</i> .....	125
---	-----

<b>“As You Command”</b> Male-Male Desire, Love, and Relationships in <i>Assassin’s Creed: Odyssey</i> <i>René Reinhold Schalleger</i> .....	133
---	-----

<b>Gender Portrayals in Videogames</b> A Reflection of Production Contexts? <i>Christina Obmann</i> .....	145
---	-----

<b>Periphery: The Departure from Avatar-Sexual Characters in BioWare’s <i>Dragon Age: Inquisition</i></b> <i>Armin Lippitz</i> .....	161
---	-----

<b>When the Future Becomes the Present</b> <i>Detroit: Become Human</i> as Social Science Fiction <i>Daniela Bruns</i> .....	173
--	-----

<b>The Case of <i>Pokémon GO</i> or How an AR-Game Influences Our Lives</b>	
<i>Sonja Gabriel</i> .....	187

## **Mixed Reality | Theory**

<b>An Introduction to Theory</b>	
<i>Daniela Bruns and Sonja Gabriel</i> .....	205

<b>Save Gamer</b>	
Gamification is Making Us Less Thoughtful; Are Gamejams a Testbed for the Cure?	
<i>John N. A. Brown</i> .....	209

<b>Gotta Go Fast</b>	
Insights into the Human-Machine-Interaction in Speedrunning	
<i>Dejan Lukovic</i> .....	237

<b>Mixed Reality Is Already There!</b>	
The Player's Body as Foundation of the Videogame Experience	
<i>Frank Fetzner</i> .....	251

<b>Settlement of Digital Land</b>	
Living Part of Your Life in the Sandbox <i>MMO EVE Online</i>	
<i>Gernot Hausar</i> .....	259

<b>Archaeology and Videogames</b>	
Towards the Nature of Artifacts as Hyperobjects	
<i>Florian Kelle</i> .....	267

<b>An Introduction to Gambling in the Context of Game Studies</b>	
<i>Alexander Pfeiffer and Georg Sedleky</i> .....	281

## **Federal Ministry of Labour, Family and Youth**

---



The Austrian Federal Ministry of Labour, Family and Youth has a clear position on the medium of digital games. This is characterized by a resource-oriented access to that medium. Thus, the ministry distances itself from a pedagogical handling of digital games that includes prohibition, and advocates for a curious, attentive and regulated handling of games in education. This would mean that parents and professionals take the lives of their children and adolescents seriously, accept digital games as part of them, find out about their effects, and then make an informed decision.

I recognize playing digital games as part of the individual and social possibilities for children and adolescents, including the organization of their free, restful, active, and self-determined leisure time, furthermore as a legitimate right in the sense of article 31 of the “UN Convention on the Children’s Rights”, so the ministry’s policies need to be based on the current findings of science and research. As a result, digital games can develop a promotional potential in various dimensions and it is primarily the condition of the play, which decides how far the potential of games actually unfolds or negative and undesirable effects occur. And that is the reason why we established close collaboration with scientific institutions, which research, publish, and educate in the field of game studies/gaming, collaboration above all through the ministry’s scientific symposium FROG – Future and Reality of Gaming.

Mixed Reality has been the topic of the 2019 edition of FROG and I wish you a great reading experience with mixed perceptions on the medium digital games.

*Bernadett Humer*

*Director General Division II – Family and Youth, Federal  
Ministry of Labour, Family and Youth*

## University of Klagenfurt

---



With the 21st century now well under way, academic research and teaching institutions have realized the necessity to critically engage with the digital transformation of societies. Pushing the boundaries of understanding the transformative potential of digital media, their affordances, their risks, and their potential to foster humane values is of utmost importance for academic institutions all around the world. It is not only the mere technological progress in itself which propels humanity forward but also, and crucially, it is the informed and multifaceted, critical reflection that is needed to guide this process towards a better future for humankind, addressing current global challenges.

As part of the digital world, in an age of mixed realities, the role of digital games cannot be underestimated judging by the sheer popularity of online and offline gaming across the globe. It is high time that thorough interdisciplinary research keeps a close eye on this phenomenon and provides society with deep insights into the social, cultural and psychological implications of digital games and gaming. What makes digital games so attractive is that they are by definition multi-medial and immersive in nature, granting agency and meaningful configurative interaction to their players like no other medium in human history. Augmented and virtual reality add further experiential dimensions to digital games, providing novel possibilities to interact, and opening up a hybrid space between the virtual and the actual.

Digital games have a cultural, social, and economic impact that cannot be neglected. As the largest global entertainment industry, the medium not only provides distraction, but it is a driving force behind innovations. In times of mixed realities, digital games offer new ways of connecting people and of learning and developing cultural as well as technological knowledge. The current challenging times highlight the importance of digital games in our societies. Several hundred million players around the world come together in specific cultures and fandoms revolving around digital games. In physical conventions but also increasingly at digital online events, people gather in dedicated spaces reaching across the actual/virtual divide to play together, to communicate, and to watch streams of others playing.

This volume has taken up the challenge of pushing research on digital games forward by showcasing insights into the social, cultural, and technological domains of digital games and gaming. The contributions emerged from the annual FROG – Future and Reality of Gaming conference in Vienna in 2019. The editors of the volume are keen researchers and active participants at this cultural, technological, and deeply human movement. FROG hosts a wide variety of speakers every year, proving how versatile and multifaceted the medium and the people working with digital games are. Inviting speakers from all over the world, the conference series answers a truly global need to discuss digital games in an open, creative, and constructive environment. The essence of these latest discussions is now condensed into this book, so that they can be shared with people around the world who are

critical participants in the new and mixed realities that we are currently building together.

*Alexander Onysko*  
*Head of the Department of English*  
*University of Klagenfurt*

## KPH Vienna/Krems

---



As an institution that trains pre-service and in-service teachers, dealing with digital media is an important concern as children and teenager do not only use media in their spare time but also bring them to school, focus on media contents in their discussions among friends and use them for communication and (informal) learning. Especially smartphones are used by pre-teens and teens no matter where they are and no matter which time it is. Using smartphones and social networks means that games also play an essential role in children's and adolescents' lives. Therefore, it is necessary that education also deals with opportunities and challenges that these digital games bring with them.

On the one hand, games might be a social connector among peer-groups but can on the other hand also be used to exclude and isolate. They might be a source of infinite creativity but also lure them into overuse or spending too much money. Technologies like augmented or virtual reality add another aspect to digital games, making them more real and offering also additional possibilities for education.

All kinds of games have been used for teaching for a long time – they often provide the opportunity to simulate processes, to slip into the role of other characters and enable experiences that would otherwise not be possible. Good games which can be used for learning and teaching, however, need to be developed and discussed by game designers, teachers, game developers, researchers as well as youth workers, students, and gamers. Only by taking into account all the different points of view of these groups, the potential of games can fully be tapped.

Therefore, conferences like FROG – Future and Reality of Gaming which enable all these groups to come together and share their ideas and experience are the basis for developing digital games that can not only captivate their gamers but do more than that: They make people think, dream and learn in an environment that is full of fun and excitement. The interdisciplinarity of this conference as well as the motto “Mixed Reality” shows that games have stopped being only virtual and entered our real lives. This book unites many different approaches towards digital games and thus provides a broad audience insight into a digital medium that is far more than mere entertainment.

*Dr. Christoph Berger, MA*  
*Rector KPH Vienna/Krems*

# **Mixed Reality | Contributions to the 13th Future and Reality of Gaming Conference 2019 in Vienna**

# Introduction to Mixed Reality and Games

---

*Emir Bektic, Daniela Bruns, Sonja Gabriel, Florian Kelle, Gerhard Pölsterl, and Felix Schniz*

When talking about mixed reality, we often refer to interactive systems in which the human perception of the world and everything that surrounds us is mixed with synthetic stimuli. When a computer-based technology requiring immersive participation is used, the mixed reality experience can be anything between completely real and completely virtual. Since our everyday life is supported and enabled by technological applications in manifold ways, it has become difficult to imagine a day without getting in touch with the virtual: Social contacts, daily tasks as well as work processes are increasingly organized through smartphones, tablets, computers and other electronic gadgets. Devices that allow their users to talk to digital images of their friends and colleagues via video calls, engage in conversations with artificial intelligence or track other people's movements on screen in real-time are blending real and virtual spaces on a daily basis. Mixed reality games, as part of this societal and technological development, do not only deliver virtual reality but also playful interactions into real environments and place ludic interludes within a context of ordinary experiences. A walk in the park is no longer just for breathing fresh air and admiring nature, but also for catching Pokémon and defeating opponents in battles. As per Huizinga's Magic Circle (1955), games are separated from the ordinary, because they are played in certain spaces at certain times by certain players. Thereby, the rules and norms of the real world are temporarily suspended, actions and behavior are interpreted by other players within the playful mindset of the game. Playing in public spaces as for example in the park illustrates that the magic circle is not as self-contained as it seems: While being focused on the screen, other pedestrians, who are non-players in this scenario, can be disturbed by the player's inattentiveness or the player can be distracted by real world events. Specific game designs that aim to perforate Huizinga's magic circle can be found in *pervasive games*, which "pervade, bend, and blur the traditional boundaries of game, bleeding from the domain of the game to the domain of the ordinary" (Montola 2009, 12). *Pervasive games* offer a mixed reality experience by systematically extending, expanding or even breaking this magic circle. According to Montola (2009) this expansion can be seen as a spatial, temporal or social one.

Having a look at the spatial expansion, games can provide many locations simultaneously, take place in unconventional places or reclaim public spaces. The gaming areas are not always clearly defined which makes the game more interesting. Another factor is that the spatial context of each player affects the game – either in relation to physical places or other players which means that location tracking technologies are used to determine spatial context. Also features of the physical environment as game objects might be used. Thus, a combination of physical and virtual spaces can often be found – either using augmented reality or combining physical and virtual players. Temporal expansion, however, might refer to an interlacing and intermixing of the game with everyday life, either by the game being interrupted for long periods of time or giving alerts to the player to resume the game at any given time. Quite often, mixed reality games are used to make use of waiting time – for example when waiting at the bus stop or at the doctor’s office. Finally, social expansion refers to playing in unexpected places and at unexpected times leading to unexpected people making a difference to game play. Observing others play a game might indirectly lead to playing a minor role without knowing that one is part of the game. Sometimes, changes in one (or more) of these areas might either be explicit, implicit or even unknown to players. However, in all cases they deliberately disrupt the known definitions of player, session and space by exploiting the ambiguity of expanding beyond the boundaries of the conventional magic circle which can be seen as kind of game play itself. Mixed reality games might even create the illusion of games not being games.

The magic circle as a theory to frame play has its critics among those scholars and researchers, who understand the separation of the virtual and the real as socially constructed in the first place. When considering digital games as a resource for physical and social experiences, it becomes difficult to maintain this construct. According to Muriel and Crawford (2018, 89–90), the designed experiences of videogames are part of our everyday real-world experiences without differing qualitatively from them. Players talk about their gaming experiences in the same way they talk about events that have happened in the physical world. While filmic experiences are particularly described with emotions, such as fear, anger, sadness, and laughter, the reports about videogame sessions resemble those about birthday parties or trips: “Video gamers talk in terms of what *happened* and what they or others *did* or *felt* when they were playing a video game” (89). When interviewing players of *Football Manager* (since 2004) and *Championship Manager* (since 1992), Crawford (2006) recognized that the narratives flowed smoothly from in-game reports to real-world football events. Based on Goffman’s frame analysis, Gary Alan Fine (1983) identifies three frames in which the players of games operate mentally: Firstly, they have an understanding of themselves and the social context in which they are embedded as a subject. Secondly, they see themselves as players of a game with a specific gameplay. Thirdly, they identify with the character they con-

trol within the game. Players alternate dynamically between these three frames of interpretation or occupy several at the same time. Thomas Malaby (2007) suggests that instead of grasping play as a safe and pleasurable activity separated from everyday life, it is more productive to investigate games as social artifacts, subjected to change in practice and meaning. The differentiation of western society between real and virtual as well as work and play fosters exceptionalistic stances, setting them apart, but “the wide-ranging unpredictability of our everyday experiences and the contrived unpredictability of games point towards a bridge, rather than a gap, between games and other aspects of our lives” (107). Therefore, play can be understood as a lived experience that is not only initiated through gameplay but is also connected to the socio-cultural context of the player. The virtual world of the videogame is extended by affiliated practices and meanings of the physical world and vice versa.

On the one hand, players are mentally engaged with videogames, on the other their physical body is essential to get in contact with the gaming system and the virtual world it is offering. Seth Giddings (2005, 1) pictures the process of starting a videogame as plugging oneself into a cybernetic circuit, where computational as well as human components are working together to bring the game to life. In his article *As We Become Machines: Corporealized Pleasures in Video Games* Martti Lahti (2003, 163) describes the gaming experience in a similar way: The “[...] delirium of virtual mobility, sensory feedback, and the incorporation of the player into a larger system thus ties the body into a cybernetic loop with the computer, where its affective thrills can spill over into the player’s space. This desire is perhaps best exemplified by players’ attempts to control the game world more fully with their own empathetic bodily movement.” Encountering a videogame does not just mean setting virtual bodies or items in motion but also being set in motion by them, feeling a physical bond to what is represented on screen. Gregersen and Grodal (2009, 65–69) understand embodiment in two ways, related to each other: Our physical and biological body, equipped with body surface, interior and senses for absorbing the world, as well as the experience of ourselves as an embodied being that can be extended for example by a tool or a virtual representative. According to Gregersen and Grodal (2009, 67) a playable avatar can be described as a “*body image in action* – where one experiences both agency and ownership” of a virtual entity. Therefore, playing a videogame does not only mean being an agent, taking actions in virtual worlds, but also being a patient, subjected to the events happening to us and our avatar. Even if only our virtual body is killed in the game, real feelings and emotions are provoked, palpable in every fibre of the body.

Virtual worlds increasingly pervade real worlds in the matter of space, time and social life, pushing mind and body further into the gray area in between, but real-world matters are as important for the creation and evolution of virtual worlds. One aspect where real and virtual are apparently intertwined in this way is the

production process of games, where people from different professions, motivations and cultures are coming together to co-create virtual playgrounds. Not only do game designers bring their own beliefs, values and perspectives into the production process (cf. Flanagan and Nissenbaum 2016), but legal and technical requirements also have to be considered. Widely known regulations refer, for example, to the protection of minors, copyright infringements and the distribution of unconstitutional symbols. Because game enthusiasts take on an important role in the production process of today's games, by providing self-created content and mods to other players or testing and reviewing early access games, the circle of responsible contributors has expanded. Additionally, the emergence of social media poses new questions concerning image, sound and video material, which is edited and shared by players in order to express their fascination or criticism.

As well as the gaming experiences are not limited to the gaming situation, but are generously shared by the players, the things we learn while playing a game are also transferred into other areas of life, unconsciously or purposefully. In this regard, the question of how and by whom the game is played is as important as examining production context, game design and game content. Learning with videogames happens outside as well as inside the classroom, in informal as well as formal settings. The latter one has gained tremendous importance over the last years for various institutions. While first attempts to utilize videogames took place in the military, today's field of application is manifold and no longer narrowed to physical and cognitive training or behavioristic learning theories. Complex videogames work across online and offline spaces, making players search for solutions to in-game problems, work out strategies or develop new skills (Beavis 2017). Many of these learning processes take place in affinity spaces where organization of space and organization of people is both equally important (Gee and Hayes 2009). On the one hand, educating a generation that has grown up as part of a participatory culture (Jenkins 1992), confronted with interactive media and the possibility to participate actively in public spaces from a very young age, comes with new challenges but also opportunities. On the other hand, today's requirements for students have changed because of the effective ways to preserve, share and retrieve knowledge. Thus, the ability to find and use information, to interact critically with it and solve complex problems is more valued than mere memorizing and repeating. James Paul Gee (2007) argues that videogames offer effective learning principles to meet these requirements of the late 20th and 21st Century. Adapting them for educational environments as well as using games or game-like technologies can help to engage students with powerful forms of learning. In this respect not only playing videogames can be a productive learning activity but also the creation of videogames can teach valuable abilities like networked thinking, problem solving and programming skills (cf. Squire 2008). At the same time "we have to be careful not to co-opt young people's cultures for our own purposes. We

need to make them full and productive partners in how we design any enterprise in which we use games for learning” (Gee 2007, 215). To realize the potential of games for learning does not only mean to carefully evaluate what fascinates and motivates players to engage themselves with virtual worlds in the first place but also how gaming culture is lived and which actors are involved. In order to achieve this, teachers and researchers should not only get in touch with gamers and fans but also with game designers and the industry.

Accordingly, we as editors consider the circumstances under which this book was created as particularly productive for a multi-perspective examination of mixed reality and games. It is largely based on contributions at the 13<sup>th</sup> FROG – Future and Reality of Gaming conference which took part between 18th and 20th October 2019 under the subheading of mixed reality. As one of the five pillars of Vienna’s GAME CITY, Austria’s largest gaming event, the FROG Conference attracts representatives of the gaming scene, industry and researchers alike. Apart from academic discourse on various subjects around videogames and the aforementioned theme, the focus of the conference (and this book) is put on bringing together scholars, game designers, young academics and practitioners from various disciplines. Between the end of September and middle of October 2019, three pre-conference events called Polliwog took place in Krems, Klagenfurt and Vienna which combined theory and practical experience of mixed reality even more intensively by providing an alternative reality (games) workshop, prototyping hybrid board games and presenting videogames as an assessment tool to test competences of players.

The book is structured into three parts – Design & Aesthetics, Society & Culture, and Theory:

The first part of the book provides the reader with several insights into the design of games as well as the aesthetic value that games convey. Various approaches to design show how games can be created and improved by reflecting on the notion of different realities merging and mixing in the process of design. Similarly, the analytical contributions point out how virtual realities reflect upon the history of other realities and how we can experience them through games.

The second part illustrates the versatility of games as drivers of sociocultural conversation, by offering up examples of their utility in commentary on topics of law, diversity, representation and a changing landscape for humanity. Intrinsically, the contributions comment on problematic trends in games and society, extrinsically they are a blueprint for using the medium as a tool for promoting positive change.

The contributions of the third part illuminate practices, skills, and experiences that spill over from everyday life into the gameworld and vice versa. By questioning dichotomies like virtual – real, gaming – ordinary and playful – serious on a social, physical and mental level, they open up a discussion about rethinking established

beliefs. Those insights can help to create a basis for new theories of games and gaming that are needed to address challenges and opportunities, for today and in the future.

## References

- Beavis, Catherine. 2017. "Living in a Digital World: Literacy, Learning, and Video Games." In *Global Conversations in Literacy Research*, 144-154. New York: Routledge.
- Flanagan, Mary and Helen Nissenbaum. 2016. *Values at Play in Digital Games*. Cambridge and London: MIT Press.
- Gee, James Paul and Elizabeth Hayes. 2009. "Public Pedagogy through Video Games: Design, Resources & Affinity Spaces." Accessed May 11, 2020. [https://mackenty.org/images/uploads/gee\\_informal\\_learning.pdf](https://mackenty.org/images/uploads/gee_informal_learning.pdf)
- Gee, James Paul. 2007. *What Video Games Have to Teach Us About Learning and Literacy*. Revised and Updated Edition. New York: Palgrave Macmillan.
- Giddings, Seth. 2005. "Playing with Non-Humans: Digital Games as Techno-Cultural Form." In *Proceedings of the 2005 DiGRA International Conference: Changing Views – Worlds in Play 3*. Accessed May 11, 2020. <http://www.digra.org/wp-content/uploads/digital-library/06278.24323.pdf>
- Gregersen, Andreas and Torben Grodal. 2009. "Embodiment and Interface." In *The Video Game Theory Reader 2*, edited by Bernard Perron and Mark J.P. Wolf, 65–83. New York: Routledge.
- Huizinga, Johan. [1938] 1955. *Homo Ludens: A Study of the Play-Element in Culture*. Boston: Beacon Press.
- Jenkins, Henry. 1992. *Textual Poachers: Television Fans and Participatory Culture*. New York: Routledge.
- Lahti, Martti. 2003. "As We Become Machines: Corporealized Pleasures in Video Games." In *The Video Game Theory Reader 2*, edited by Mark J.P. Wolf and Bernard Perron, 157–170. New York: Routledge.
- Malaby, Thomas M. 2007. "Beyond Play: A New Approach to Games." In *Games and Culture 2* (95), 95–113. <https://doi.org/10.1177/1555412007299434>
- Montola, Markus. 2009. "Games and Pervasive Games." In *Pervasive Games: Theory and Design*, edited by Markus Montola, Jaakko Stenros, and Annika Waern, 7–24. Burlington: Elsevier.
- Muriel, Daniel and Garry Crawford. 2018. *Video Games as Culture: Considering the Role and Importance of Video Games in Contemporary Society*. London and New York: Routledge.

Squire, Kurt. 2008. "Open-Ended Video Games: A Model for Developing Learning for the Interactive Age." In *The Ecology of Games: Connecting Youth, Games, and Learning*, edited by Katie Salen, 167–198. Cambridge and London: MIT Press.