# Augmented Play, Art, and Space

## The Cognitive Coupling of Avant-Garde Games with Unexpected Mental Spaces

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Based on experiences in pervasive play[1] in media arts, this chapter questions the relationship between spatial perception and computer games from the perspective of playful, cognitive, and activist interventions. Today, in creating the artistic aspects of video games—what is known as "game art"—space is thematized as an almost meditative experience. In a series of artistic games, the concept of "flow" is induced by what are known as "walking simulators" in the architecture of games. Currently, the genre of game art is resurging in specific relation to the flow experience of virtual space, entangled with the physically experiential real space. This provides an opportunity to learn from the fields of performance art, staging, and motivational design. This is demonstrated by the art avant-garde gaming scene.

In the design and connection of digital and real space—known as "hybrid reality games"—the themes of corporeality, cognition, and superimposed spatial perception become virulent. As such, a new urban game activism can be identified: one focused on bodily experience, cognition, and spatial experience. The phenomenon is slightly shifted through augmented reality, which has become standard on contemporary mobile phone devices. The political dimension of playing as a form of resistance poses a model for the future and stands for hope at the forefront of a new, meaningful play movement—which, last but not least, would also beget new fields of artistic research.

**1** | The term "pervasive play" refers to playful experiences of everyday life, which take place in both physical and virtual spaces and are mediated by technology.

## CTRL-Space: Games as Simulation of Spatial Orientation in Interaction Situations

The curator and game art researcher Stephan Schwingeler[2] points out that flow—the complete immersion in a game—only occurs in a longer, more emotionally-influenced perception of game content. Such touching subject matters are spatially located. In sum, the simulation of spatial orientation in situations of interaction is a special feature of computer games, as artistic artefacts in a "space machine":

> This aspect of space is central to understanding computer games as a medium. Historically, since the game *Tennis for Two* in 1958, the computer game image has moved ever further into space—from simple, two-dimensional representations to highly complex, three-dimensional environments. [...] The subjective view of the user into the space of the computer game is called the arbitrary perspective. This new kind of gaze concludes the exploration of the computer game as a space machine.[3]

Schwingeler has also researched spatial perception in games.[4] From this point of view, spatial perception appears as equally interesting in games and art perception. As part of the groundbreaking game art exhibition he curated at the Karlsruher Zentrum für Medienkunst (ZKM) in 2014, Schwingeler shows a game by the artist group Jodi, *CTRL-Space* (2001) as a flat projection on a screen.[5] Tucked between two pillars of the high halls of this former industrial building, which now serves as an exhibition space, abstract lines become visible. They cut the game into its essential components. White lines and surfaces can be rotated and turned by the

**2** | This section was originally published in my article "Kriegsspiele und kognitives Mapping. Sensomotorische Erfahrung und ihre spielerische Schärfung," in *Medien – Krieg – Raum*, ed. Lars Nowak (Paderborn: Fink Verlag, 2018), pp. 451–470.

**3** | Stephan Schwingeler, *Die Raummaschine. Raum und Perspektive im Computerspiel* (Boizenburg: Werner Hülsbusch, 2008) p. 3.

**4** | Stephan Schwingeler, *Kunstwerk Computerspiel – digitale Spiele als künstlerisches Material, Eine bildwissenschaftliche und medientheoretische Analyse* (Bielefeld: transcript, 2014), p. 53.

**5** | New reference required and are now part of ZKMs permanent collection.

player, but do not permit perspective view or spatial experience. 3D becomes a surface. *LinX3D*, by Max Moswitzer and Margarete Jahrmann—in the original version of the same exhibition (Netcondition 2000)—uses a replica game console in the exhibition space to show similar surfaces that had been altered and cleared of space by circular feedback.[65] In this work, the artists transformed "unreal" shooter space into an aesthetic flat world, more reminiscent of constructivist and deconstructed pictorial worlds of abstract painting. Nevertheless, it was exhibited as a real arcade-style game console, in which visitors to the exhibition could become players between real and virtual spaces—which was then digitized in front of the console through a hidden camera.

As an experiential space, it was flat—but it could be experienced as a three-dimensional movement in space by means of the cursor joystick or the mouse, freely rotated in real space. 2D and 3D were thus linked in an endless feedback loop.

*Fig. 100: Margarete Jahrmann and Max Moswitzer, LinX3D, Netcondition Raum, 2000*


**6** | The game console and flat-space screenshot for the *LinX3D* project can be accessed here: https://zkm.de/en/artwork/linx3d (accessed July 16, 2019).

Projected on a screen—no longer playable, and instead running in a loop, the game becomes reminiscent of a panel painting. In its reduced form, however, it is a cut that become visible—matching a cut into the surface of the canvas, like a protest against the art establishment. These cuts, entitled *Cuttings*, were spread in art history as an avant-garde technique, and also taken up in fashion, including the costumes of Ellio Petri's feature film *La Decima vittima* (1965)—in English, meaning "the tenth victim".[76] The plot of the movie is a game that society organizes. In a fictionalized future live TV game, the architecture of Rome is played to life and death. The climax of the film takes place in the ancient arena of the gladiators in Rome: the Colosseum. Interestingly, the game mechanics shown in the film are an anticipation of reality games as we know them from the productions of experimental theater groups, such as Sigma or Machina Ex. These occurred in the presence of real games and escape rooms, informed by game cultures. In *Decima vittima*, however, private spaces are connected with public architecture. In a shooter scene, the protagonist—the huntress, played by the Swiss actress Ursula Andress—shoots targets that resemble picture frames. She appears as a model in game clothing, with slits and cutouts in the scenography of a designer living room. Then, the wall of the room moves, and the old-fashioned living room of the parents of her opponent, played by Marcello Mastroiani, appears behind it. Spaces and times frame each other in this game film, staged as a game show. Erving Goffman's (1974) theory of framing becomes visible here directly in the image motif of a real-spatial game.[8] It refers to various cultural spaces of social play that spatialize themselves as systems of reference.

**7** | In order to control human aggression and exploit it economically, governments and companies have developed a worldwide game show in the twenty-first century. "The Big Hunt" promises wealth and honor to the winner. A computer randomly selects players and turns them into hunters and victims. The hunters follow their victims around the world to kill them and move on to the next round. The victims are allowed to kill the hunters. The goal is to survive ten rounds: five as hunters, five as victims. See Robert Sheckley, *Das zehnte Opfer* (Bergish-Gladbach: Bastei Lübbe, 1985).

**8** | Erving Goffman, *Frame Analysis: An Essay on the Organization of Experience* (New York NY: Harper & Row, 1974).

*Fig. 101: Ellio Petri, La Decima Vittima, Photograph of Game Scenography Set Design, 1965*

Artist Paolo Pedericini[97] compares works of game art with the works of American artist Gordon Matta-Clark (1943-1978), in which the artist creates large holes and cuts through existing architecture. At the edges of these interventions, the building's materials used become visible. The structure of this architecture thus becomes visible. In this sense, both game art works and Matta-Clark's *Cuttings* (1970s) reveal the underbelly of their respective systems.

**9** | See the statement by artist Paolo Pedercini in: Schwingeler, 2014, p. 297.

## Computer Game Space: Surface and Subsurface

In the Ph.D. thesis entitled *MODDING Künstlerische Forschung in Computerspielen*[10], which I supervised and which was defended in 2018, German game artist and theorist Thomas Hawranke argues how the architecture of "modding," or the creative change of computer games by players themselves, can be explained as a spatial structure. Referencing the early computer artist Frieder Nake, he describes the space of the computer game between surface and subsurface as two places in which the computer image is interpreted.[11] The algorithmic signal is processed on the subsurface—by the hardware—and the character is generated on the surface—on the visible interface. He chooses examples from the pioneering period of game art, which was characterized, above all, by the deconstruction of games and the experience of space. The aforementioned work *SOD*, by Jodi (1999), can also be interpreted according to these parameters. It shows the "inside" of a computer game; its invisible collision detectors and graphically-represented variables.[12] As Hawranke describes:

> Figurative appearance and narration disappear and abstraction reveals how computer games actually work. Deprived of its stagings and atmospheres, SOD allows the viewer to perceive the underlying code that emerges through the simple geometric forms and visualizes the interplay of surface and subsurface.[13]

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**10** | Thomas Hawranke, "MODDING. Künstlerische Forschung in Computerspielen" (Ph.D. diss., Bauhaus-Universität Weimar, 2018), https://e-pub.uni-weimar.de/opus4/frontdoor/deliver/index/docId/3788/file/Hawranke_Thomas_Modding.pdf

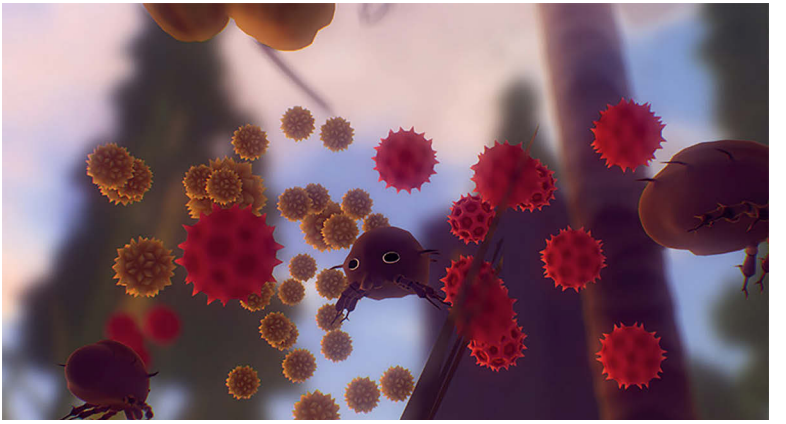
**11** | Frieder Nake, "Surface, Interface, Subface. Three cases of interaction and one concept," in *Paradoxes of Interactivity. Perspectives for Media Theory, Human-Computer Interaction, and Artistic Investigations*, eds. Uwe Seifert, Jin Hyun Kim, and Anthony Moore (Bielefeld: transcript, 2008), pp. 92–109, here p. 105.

**12** | Pit Schultz, "Jodi als Software-Kultur," *Install.Exe – Jodi, [Plug In] Kunst und Neue Medien*, ed. Tilman Baumgärtel (Basel: Christoph Merian Verlag, 2002) pp. 31–39.

**13** | Hawranke, 2018, p. 140.

This exciting approach of understanding space as the surface and subsurface of a technological object—a program that coincides with an artefact, simultaneously becoming the simulated and the simulacrum—will now be explained using examples from the artistic implementation of computer games as works of art in space. I will apply this approach to current hybrid games in the field of augmentation, be they in the city, part of a topographical experience, or in an exhibition space as a means of receiving art.

*Fig. 102: David O'Reilly, Everything, Screenshot, 2017*



## Starting Point: Walking Simulator

In games described as walking simulators, the perception of space remains fragmentary; the environment is explored, and possible courses of action are examined.[14] New concepts for navigation through three-dimensionally defined space are formulated in the critical practice of artistic modification of games—as cultural resistance to the established aesthetics of the game space as a space for action. Newly discovered interest in walking simulators within the independent game scene, as well as in the award-winning art world, can be discussed using the example of a multiple award-winning game: *Everything*, by the well-known 3D-animator David O'Reilly, was presented at the 2017 Berlin Film Festival and was

**14** | Katie Salen Tekinbas and Eric Zimmerman, *Rules of Play. Game Design and Fundamentals* (Cambridge MA: MIT Press, 2003), p. 559.

awarded a prize at Ars Electronica.[15] It is a good example of a new artistic game that succeeds by allowing minimal action through pure spatial perception. In a flowing space, one constantly changes one's own form of identification and representation. Shifting scenarios and iridescent spaces, as well as a constantly-changing representation of one's own physicality, permit unorthodox interpretations of the fundamental conditions of being. Holistic philosophical content is conveyed through quotations by the philosopher Allan Watts, using his original voice. All of this results in a new sense of space in the game, defined by the form of artistic expression that refers to the realities of daily life, and the tropes and aesthetics of computer games. Thought patterns are tested in game flow and "creative flow," interpreted through current research into happiness and understanding contexts.[16] Meaning is processed from the absurd. The aim of the game is a walk toward insight and into fundamental questions of human existence, which extend from a micro-level of inner being into the macro-universe of perception.

## Real Walking Flow: AR Games in Art Space

> "Play, radically broken from a confined ludic time and space, must invade the whole of life. [...] play: the common creation of selected ludic ambiances. The central distinction that must be transcended is that established between play and ordinary life; play kept as an isolated and provisory exception."
> Guy Debord, 1958[17]

**15** | Everything is a beautiful interactive experience created by David O'Reilly, and narrated by the late, great philosopher Alan Watts. This PlayStation 4 and PC game lets you transform yourself into a thousand different things. Access more online: http://www.everything-game.com (accessed July 16, 2019).

**16** | Mihaly Csikszentmihalyi, *Flow: The Psychology of Optimal Experience* (New York/London: Harper Perennial, 2008).

**17** | Guy Debord, "Contribution to a Situationist Definition of Play," *Internationale Situationniste* No 1 (June 1958), trans. Reuben Keehan (Situationist International Online), http://www.cddc.vt.edu/sionline/si/play.html (accessed July 16, 2019).

Games, as a twentieth-century art form, are comparable to the political spatial games of Situationism. These performative games of twentieth-century century art were based on movements in real space, and defined public space as play space.[18] City maps acted as game-rule carriers, but did not correspond to the real topographies n which play was conducted. For example, a city map of London was used to stroll through Paris. It was a matter of connecting the maps with one's own psychological constitution. This is why the term "psychography" was introduced for these performance games in public space. These Situationist performances correspond to today's games in the form of "virtual cards"; these combine a fictitious reality with real topographies, by pretending to move through a narrative game space.

Augmented reality gaming in art can illuminate the relationship between spatial perception and computer games on different levels. Henry Jenkins, American cultural theorist and long-time director of the Comparative Media Studies Gamelab at the Massachusetts Institute of Technology (MIT), describes "game design as narrative architecture".[19] In the three-year international research project *Play and Prosume* (2013), we were able to investigate these interrelationships with an international team. The result was an augmented reality game exhibition installed in the Vienna Kunsthalle, in the form of a spatialized computer game.[20] The interplay of real space, walking, and research was specifically staged as a game plan for this exhibition. Researched content for individual monitoring and influencing was not only presented, but the exhibition itself was a tool for the research team. It was a test facility, aiming to obtain data on visitors touring the space. The game was played with mobile trays and an alternate reality application. Specially-developed textile patterns were transposed

**18** | In the field of Situationist art from the twentieth century, such "inner maps" were created as automatic recordings of perceived movements. The founder of Situationist International, Guy Debord, advocated an activist definition of the game in his 1958 essay "A Situationist Definition of Play." See Debord, 1958.

**19** | Electronic Book Review, review of Game Design as Narrative Architecture, by Henry Jenkins (October 7, 2004), http://electronicbookreview.com/essay/game-design-as-narrative-architecture/ (accessed July 16, 2019).

**20** | See my personal website for further details: http://www.margaretejahrmann.net (accessed July 16, 2019).

into software codes. The aim of the game was to explore physical experience and knowledge generation.

*Fig. 103: Play & Prosume, Augmented Reality Game, Kunsthalle Wien, Photograph of Exhibition, 2013*


The physical experience of space through the exploration of topographies in motion was also introduced into the experimental urban gaming scene by Katie Salen (2003), with her project *Big Urban Games*.[21] As a reference of my own—which I allow myself as a practical theorist who is herself active in artistic game design—I would like to cite a series of urban games

**21** | The *Big Urban Game* was commissioned by the Design Institute of the University of Minnesota as a part of its Twin Cities Design Celebration, with the goal of encouraging the residents of Minneapolis and St. Paul to see their surroundings in a new way, and to think about the design of urban space. See Margarete Jahrmann "The Big Urban Game, Re-Play and Full city tags: Art game conceptions in activism and performance," in *Performing the Digital. Performativity and Performance Studies in Digital Cultures*, eds. Martina Leeker, Immanuel Shipper and Timon Beyes (Bielefeld: transcript, 2016), pp. 171–188. https://www.transcript-verlag.de/978-3-8376-3355-9/performing-the-digital/ (accessed July 16, 2019).

by the Ludic Society Collective.[22] The project served to promote hybrid and artistic urban games, which were performed at international media art festivals. The game performances were documented in a series of magazines, the *Ludic Society Magazines*, which can be downloaded online. This game, which combined technology and real spatial experience into a form of pervasive game, was based on the concept of situated play.[23] Hybrids of virtual technologies and physical realities allowed the testing of real experiential game architecture. As precursors to the commercialized application of hybrid augmented reality games in urban space, such as *Pokémon Go*, they can be found in among society in contemporary works of game art. Examples include the group Blast Theory, with groundbreaking works like *Can You See Me Now* or *Uncle Roy Is All Around You*. An excellent example of this is the current urban game by Blast Theory, entitled *A Cluster of 17 Cases* (2019).[24]

In contemporary games by groups oriented more toward theater, such as *machina eX* or *Invisible Playground*, fictional computer games are retold as real-spatial experiences, in order to explore a gray area between game design and participatory art. Such modulations of cause and effect, in technologically expanded environments where simulation and reality overlap, and where real space and play space become one, can be discovered more and more frequently in such theatrically staged games today. The purpose of *Invisible Playground* is described as follows:

By referencing playful traditions like video games and sports, we connect to something known and remix it to something new and one-of-a-kind. Our games are post-digital. They use technology, but know of the power of bodies in shared spaces and at a specific site. By creating games that make stories and histories of places and very different people playable,

**22** | See this link to the Ludic Society for further information: http://ludicsociety.net (accessed July 16, 2019).

**23** | See Akira Baba, "Situated Play" *Conference of DiGRA*, the Digital Games Research Association (September 24-28, 2007, Tokyo, Japan).

**24** | Blast Theory, "A Cluster of 17 Cases" (New York NY/Hong Kong: Museum of the City of New York, September, 2018-January 2019), https://www.blasttheory.co.uk/projects/a-cluster-of-17-cases/ (accessed July 16, 2019).

we aspire to contribute to the development of play as a cultural technique and an art.[25]

Prior to these productions, however, there were games that directly connected theater and urban space. These included the game *Evening of the Ludic Society* (2007) by Max Moswitzer, René Bauer, Olli Leino, Doris C. Rusch, and F.E. Rakuschan, among others, which was presented as *Import Export Game* at the Dutch Electronic Arts Festival in Rotterdam.[26] Evenings at the renowned Rotheater Rotterdam, a play was performed that refined a new way of experiencing urban space. Staged as a psychotherapy-oriented setting—with a carpet over a couch borrowed from Sigmund Freud's original practice—a renowned game theoretician from MIT Gamelab, Dr. Carmen Rusch, led a conversation with her game-addicted friend whom she had learned to love in Ultima Online.

*Fig. 104: Evening of the Ludic Society, RFID Tagging Game, Rotheater Rotterdam, 2007*

**25** | See Invisible Playground, "Games," http://www.invisibleplayground.com/en/category/games (accessed July 16, 2019).

**26** | See "The Evening of the Ludic Society," DEAF07 (Rotterdam: Ro heater, April 12, 2007) https://v2.nl/events/the-evening-of-the-ludic-society (accessed July 16, 2019).

For about half of the season, after an introduction and lectures, half of the audience was invited outside into the surrounding urban space. In front of a half-empty theater hall, the performance continued in parallel on stage. The players in the city were equipped with mobile phones and had to carry out orders in small groups, which did allowed the individual players to remain in this immersive social experience. However, the urban space was perceived differently: as play space. On the stage, with an old Bakelite telephone, calls from the players were answered. Accompanied by an operator, they placed objects in the real space of the next street and found them again on a predefined area near the theater. Using radio frequency technology (RFID)—which at the time had become as omnipresent as the Internet of Things—everyday objects such as cups and glasses in pubs were marked. These everyday objects thus became objects of knowledge in the game, artefacts. They could be read as "objects of desire," like in the Import/Export game for game-capable phones—specifically, Nokias, which were already equipped with near-frequency readers (NFC) by 2007. This resulted in a form of technological augmentation with the help of RFID technology, which, of course, was not intended to be used this way by those who initiated the technologies. However, it led to the introduction of the spatial perception of the city as game architecture. But what role does the human condition—the physical and mental constitution of the players—play?

## Bodily Architecture and Spatial Experience: Cognitive Mapping Through Virtual Game Spaces

Recently, a new "cut" has been made into the architecture of the body. Biofeedback games and self-optimization applications collect data and generate a fictitious form of bodily architecture. The mapping of movement patterns creates a psychogeographic representation of individual movements in space, which then generates a sort of "data body," which must constantly be optimized. Features of mobile interfaces, such as gyro sensors and geographic mapping, are used to collect data about an individual—and then to generate an "architecture of the self" within the context of the game. Coupled with direct bodily interfaces, such as the Apple Watch and mobile biofeedback sensors, the innermost self and its data become part of new urban spaces.

Games provide the advantage of what is known as "motivational design," meaning the active consent of a person to have their data collected in order to allegedly improve one's physical well-being. As with all health-related positive aspects of self-measurement, there are also justified criticisms of the quantified self, and of the obvious topic how personal data is financialized.[27] In contrast, the potential of art as activism is represented by many works of game art.[28] Elements of the virtual game can be used as experimental stimuli in real space-time experiments. An example of this is the installation *I Want to See Monkeys*, shown at the 2017 Ars Electronica exhibition entitled *AI*. In a performative setting, this work combines elements of artificial intelligence, artificial neural networks, and the dramaturgical *mis en scène* of a neuroscience laboratory. The structural coupling of methods and disciplines offers a new form of discourse in the public sphere of art on the stage of game art exhibitions.

The cognitive mapping of spatial realities associated with a spatial experience must be considered separately in hybrid games of the augmented reality genre. At the 2016 Berlin Bernstein Conference, neuroscientist Daphne Bavelier presented a study that demonstrates the importance of computer games for spatial perception, as well as the corresponding potential to train cognitive abilities in stressful situations.[29] Software testing the detection of three-dimensional objects in moving environments, by utilizing a computer model, was completed by participants who had previously achieved the highest scores playing the computer game *Call of Fortress* ten hours a week. Bavelier calls increasing these skills through three-dimensional action games "brain-boosting." The neurophysiological formulation of internal representations of space, based on the recording of spatial information through multiple sensory impressions, is a promising future field of investigation—especially in regard to the connection between real spatial and virtual game worlds. Experiences of movement in virtual space, however, can only be interpreted as perceptions of move-

**27** | Simon Schaupp, *Digitale Selbstüberwachung. Self-Tracking im kybernetischen Kapitalismus* (Heidelberg: Verlag Graswurzelrevolution, 2016).

**28** | Molleindustria and Blast Theory are examples of this. See their websites: http://www.molleindustria.org and https://www.blasttheory.co.uk (accessed July 16, 2019).

**29** | Daphne Bavelier and C. Shawn Green, "The Brain-Boosting Power of Videogames," *Scientific American* 315, no. 1 (July 2016), pp. 26–31, here p. 26.

ment to a limited extent, since some forms of sensory input are missing in comparison to physical movement, which contains all sensory feedback mechanisms.[30]

*Fig. 105: Margarete Jahrmann and Stefan Glasauer, I Want to See Monkeys, Area7lab, installation, Ars Electronica, 2017*

Thus, cognitive representations and abilities derived thereof are only obtained by a movement reduced into one or more components. The strategies conveyed in hybrid games demonstrate, however, how an individual not only performs representative actions in the game, but even becomes capable of action in concrete geographical reality. This connection should

**30** | As described by Jeffrey Taube, Stephane Valerio, and Ryan Yoder: "[...] when participants perform a virtual navigation task in a scanner, they are lying motionless in a supine position while viewing a video monitor. Here, we provide evidence that spatial orientation and navigation rely to a large extent on locomotion and its accompanying activation of motor, vestibular, and proprioceptive systems." See Jeffrey Taube, Stephane Valerio, and Ryan Yoder, "Is Navigation in Virtual Reality with fMRI Really Navigation?" *Journal of Cognitive Neuroscience* XXV/7 (July 2013), pp. 1008–1019, here p. 1018.

be investigated further—in games, using extended body interfaces as an artistic research practice.