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From Game Spaces to Playable Worlds

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Abstract

In this paper I will critically examine the phenomenological underpinnings of what we might call the 'spatiality paradigm' in computer game studies – the project of using spatial metaphors and terminology to understand computer game play. Drawing on the (post-)phenomenological tradition, I argue that while this terminology is useful for analytic projects seeking to shed light on the structure and form of the game artifact and the processes it facilitates, spatial notions do not necessarily resonate with the first-person experience of computer game play, especially in cases of playing games of genres which do not rely on simulated locomotion and proprioception in three-dimensionally modeled space. Furthermore, I argue that the differences between single-player and multi-player games – namely that single-player games can be described, using Ihde's framework of intentionality relations, as situating in 'alterity relations' and multi-player games in 'relations of mediation' – further complicate the issue of spatiality in computer games. Given these observations, I suggest that whereas the spatial notions appear problematic for the purpose of first-person description of the experience of playing single-player computer games, the notion of 'game world' seems more accurate a description of that with which the players are engaged with.

Introduction

Spatiality is sometimes understood as one of the key paradigms with which new media, in general, could be explained (cf. Manovich 2002). In this light it is not surprising that several authors (e.g. Friedman 1999, Aarseth 2000, Jenkins 2004, Calleja 2007, Günzel 2008) have approached computer games, too, through spatial metaphors. It has even been suggested that emphasizing spatiality when discussing computer games can be framed as a way of reconciling the two distinct perspectives emphasizing playability and narration. (cf. Günzel 2008) The question to be asked in this paper, from the perspective of (post-)phenomenological philosophy of technology is whether the feasibility of using spatial terminology in analysis extends to talking about the lived experience of computer game play.

While spatial metaphors seem to prove useful for analytic projects on computer game 'texts', it seems unclear whether they appear useful for projects that seek to understand

computer games from the first-person perspective, as they appear 'as played' (e.g. Leino 2009, Bayliss 2010, Podleschny 2012). In other words, I am interested in finding out whether the spatial terminology resonates with the lived experience of computer game play. This question becomes relevant especially in cases where the player is interacting with an game artifacts that cannot sustainably be described as offering an experience of "simulated locomotion" in two- or three-dimensional space. In terms of genres, this description seems to overlap with colloquial definitions of 'puzzle', 'strategy', 'simulation' and 'tycoon' genres.

My reader may wonder why I have chosen this kinds of games, instead of 3D environments as paradigmatic examples through which to analyse experience of space in single-player computer games. Those who subscribe to the assumption of there being a category of things we may refer to as 'single-player computer games', may consider my examples as outliers through which new light can be shed on the more conventional examples which seemingly make use of 'space' as we know it from embodied experience, and thus on the role of space in the experience of single-player computer game play in general. Those who do not subscribe to the assumption of there being a category of things we may refer to as 'single-player computer games' are invited to consider the analysis in this paper as an analysis of the role of space in the experience of playing 'simulation' or 'tycoon games'.

The assertion about the usefulness of spatial terminology in analysis of computer games can be easily backed up with emipirical observations. Consider for example the game *Sid Meier's Railroads!* (2006, later *Railroads!*) in which the player views the game's landscape from a freely movable and zoomable bird's eye perspective and lays railroad tracks through the landscape, taking into consideration the steepness of hills and turns and the costs of bridge-building and tunneling, in order to assign freight to be hauled from one city to another in a pursuit of maximal profit. The activity of playing *Railroads!*, including its details like challenge, success and difficulty, can be meaningfully described by drawing on spatial terminology. For example: greater distance between a coal mine and a city equals greater cost of track-laying, greater elevation of hills and steepness of curves equal slower trains. Cost and delay in turn equal a potential drop in profits which subsequently equals increased difficulty in terms of survival to be coped with. Based on these observations we may conclude that *Railroads!,* like many if not most computer games, can be described as being about space. In the following, let us explore whether this observation justifies drawing an affinity to space, as that in which we exist, to the extent that would sustain the use of spatial terminology in analysis of computer games as played.

Game 'Space' and Existence

Let us approach the relation between spatial terminology and spatial experience by turning to Merleau-Ponty (2005, 94-5), according to whom my "body is the pivot of the world" and "the unperceived term in the centre of the world towards which all objects turn their face". My spatial experience is characterised by perceiving my surroundings in

terms of dimensions and distances between my body and my environment – which objects are within my reach and reaching which objects would require me to stand up, and so on. Gallagher and Zahavi (2008, 141-4) contextualise Merleau-Ponty's assertion by outlining three "spatial frames of reference". The "proprioceptive frame", refers to my awareness of my own body. It is 'according to' such frame that I know the location of my arms and legs without any conscious reflection. The proprioceptive frame is an embodied sine qua non for the "egocentric frame", in which my body is the "experiential zero-point" and the "indexical 'here' in relation to which every appearing object is oriented". (Gallagher and Zahavi 2008, 142). The third, "alleocentric" frame, refers to the purely objective conception of space 'according to' which "it doesn't matter where you happen to be standing, in Copenhagen, Rome, or New York; Copenhagen is always north of Rome." (Gallagher and Zahavi 2008, 141). Not unlike how Merleau-Ponty and Gallagher & Zahavi suggest that spatial existence begins with body as the zero-point, a similar observation about the role of first-person experience in spatiality is made by Sartre (2003, 512), who suggests that:

> the only concrete placing which can be revealed to me is absolute extension – i.e., that which is defined by my place considered as the center for which distances are accounted for absolutely, with me as object and without reciprocity. The only absolute extension is that which unfolds starting from a location which I am absolutely.

With reciprocity Sartre (2003, 512) refers to the interrelations of figures in space, constituting what he calls "geometric" space, which seems to correspond to how Gallagher and Zahavi (2008, 141) describe alleocentric space. Based on the insights of Merleau-Ponty (2005, 94-5), Gallagher and Zahavi (2008, 141-4), and Sartre (2003, 512), we may conclude that any account of 'existence in space' depends on the body as point of view upon the world. To speak of game space as comparable to the real space we exist in involves accounting for the proprioceptive and egocentric frames of reference in relation to 'game space': i.e. where is the indexical 'here' in the description and what is its experiential basis if not proprioception (cf. Gallagher and Zahavi 2008, 141). As we do not have bodies as proprioceptive points of view inside computer game space in the manner we have them in the real world, pursuing this line of argument would require us to introduce a workaround for the lack of body "in" the game in order to account for the indexical 'here' in the game space. Let us try to establish this workaround with Klevjer (2006) and Aarseth (2000). On the one hand, Klevjer (2006) has applied the perspective of presence 'in' games on avatar-based computer games. In his analyses, the avatar[1] takes the role of a 'vicarious body' through which the player perceives the game world. Following Klevjer, we may consider the avatar as 'the pivot of the game world' in a Merleau-Pontian sense. On the other hand, Aarseth (2000, 162) observes that computer games

[1] Using the simple notion of "avatar" in reference to Klevjer (2006) does not really do justice to his analyses, in which the tasks and roles of the avatar are re-articulated with more detailed concepts. However, the brief mentioning goes to show the kind of the measures which would be necessary if we held to the notion of a spatial game world in which we could exist.

> are constituted of signs and are therefore already dependent on our bodily experience in, and of, real space to be "hallucinated" as space.[2]

Putting the pieces in Aarseth (2000) and Klevjer (2006) together results in a workaround for the lack of body: a suggestion that as players we would observe signs off the screen, and based on what we know about locomotion and proprioception in the real space, 'hallucinate' our interplay with the signs, including those constituting the "avatar", as simulated locomotion and proprioception. This description seems to resonate well with for example a story-game like *Half-Life 2* (2004). With simulated locomotion in three-dimensional represented space and convincing narratives and protagonists to identify with, the game invites "immersion" (cf. Calleja, 2007) on multiple levels. The game invites me to imagine myself as Gordon Freeman doing the things that Gordon Freeman does not only in the sense of the plot turns of the game's story, but also in the sense of Gordon Freeman's locomotive capabilities being my own. In case of games like *Half-Life 2,* we might be able to describe sufficient similarities with the ways in which we operate in real space and the ways in which we operate in the game space (e.g. in both grabbing or dodging things involves moving the point-of-view) to justify equating game space with the space in which we exist, and, by inserting the interface of 'hallucinated locomotion' being able to use theories of the real space to explain the game 'space'. We may perhaps consider *Half-Life 2* as a paradigm case of the Aarseth-Klevjerian 'hallucinated' existence in game space.

Let us examine how the description of 'hallucinated' existence resonates with the experience of playing *Railroads!*. While *Railroads!*, too, at least to some extent, is suggestive of a narrative framework within which choices and actions could be explained – for example the player can give a name to her railroad firm, and, in the initial loading screen images of famous industrialists and railroad tycoons are presented, with whom the player, supposedly, can identify – it seems that in order to understand the actions and choices available in these games, less intellectual investment in the storytelling aspects is required, compared to for example role-playing games with first-person perspective. In *Railroads!,* for example, there are neither 'protagonists' in the story-game sense nor anthropomorphic NPCs: *I* am building railroad tracks and *my* tracks were blocked by the AI opponent. I can move the god-like omni-present perspective and zoom in and out at will to see the "Bucharest Bullet" express train belching black smoke as it climbs the Carpathian mountains. Apart from merely observing, I can upgrade a depot in Varna at this moment and in the very next moment be laying new track on the other side of Europe. There is neither anything corresponding to a body 'in the game', nor any fictional framework to help me ease into any 'virtual body', like there is in for example *Half-Life 2*. To speak about my existence 'in' the 'space' of *Railroads!* in a similar fashion like we can speak of my hallucinated existence in *Half-Life 2*, we would have to stretch the notion of existing in space so far that it would lose much of its descriptive powers, as we would end up addressing something like 'disembodied omnipresent

[2] A similar distinction between 'real space' and the computer game space is found in Adams (2003), who suggests that space in computer games is "simulated space, an imaginary two- or threedimensional region whose visual appearance is mapped onto the twodimensional surface of the video screen", pointing out also that computer game 'space' is an "imaginary space."

existence. It seems that it is unnecessary for me as a player of *Railroads!* to 'imagine', 'hallucinate', or otherwise conjure up fictions of myself 'existing in' the space of *Railroads!* in order to involve myself with the space that *Railroads!* is about.

Perhaps my experience of involving the 'space' of Sid Meier's Railroads! could be described without accounting for any, necessarily 'fictional' or 'imagined', body as the pivot of the 'game world.' Letting go of the notion of 'existence' would free us from having to show objective presence in the game space, and, when faced with the evident lack of objective presence from having resort to 'fiction' or 'make-believe', which do not resonate with the intuitive first-person experience of the tracks in *Railroads!* being 'my tracks', very much like this text on the screen of my computer is 'my text'.

Since any notion of spatial experience must be rooted in the frame of proprioception and since we have no proprioception in computer games (neither in *Half-Life 2* nor in *Railroads!)*, there can be no proper spatial experience provided by a computer game. The best we could do is to call it some kind of 'represented space', and assume that the player pieces it together, through 'hallucination', into space as experienced. Though it might open convenient avenues for analysis, we have no reason to automatically assume that the relation between the player and a representation of space presented by a game would be like the relation we have with actual spatiality – i.e. relation characterized by existence.

Since computer games do weird things to temporality, for example with the wormholes of saving, loading and cutscenes (e.g. Juul 2004), it would not seem too unheard-of to assume that they were able to do similarly outlandish things to spatiality, like, letting us involve ourselves in what may resemble 'space' without a proprioceptive pivot of existence in that space. Denying the possibility of real spatial experience in *Railroads!* does not prevent us from discussing the spatial representation in *Railroads!* in the sense of the alleocentric frame (cf. Gallagher and Zahavi 2008, 141). For example, without having to account for neither the indexical 'here', nor the process of spatialization and its origins, we can compare distances between cities and conclude that laying the track from Venice to Berlin over the Alps is more cost-effective than making a detour via a pass in the mountains. This is what a successful player might do.

In the remainder of this paper, I shall attempt to show how the experienced significance of space in *Railroads!* can be described without replicating the description of how real space becomes significant to embodied human beings. In this description, a significant difference emerges between single-player and multi-player computer games.

From 'Simulated Spaces' to 'Playable Worlds'

As has been suggested, spatiality is an important trope in many computer games, and, as discussed previously, the descriptions of computer game 'space' as 'represented' (e.g. Aarseth 2000, Adams 2003) and 'navigable' (Friedman 1999), among others, seem sensible. While the claims of computer game 'space' as 'represented', 'navigable', or 'virtual', are valid, they are somewhat misleading. If 'represented space' or 'navigable space' were accurate descriptions of the role of space in single-player computer games, the spatiality of computer games could be easily grouped together with spatiality of

interactive art, multimedia CD-ROMs, interactive museum exhibits, and the like. While there of course are similarities, intuitively we know that such grouping would not be as accurate as possible. In the following, I will argue that the relationship between the single-player game 'space' and the activity of solitary gameplay is not like that between a container and the contained, but a rather more delicate intertwinement in which the spatial representation acts in service for a mechanism of freedom and responsibility. The involvement of this duality of freedom and responsibility seems to be what distinguishes computer game 'space' from represented space.

Aarseth, Smedstad and Sunnanå (2003, 48) postulate a distinction between "games in virtual environments – that is, games that take place in some kind of simulated world" and "purely abstract games like poker or blackjack". Aarseth (2003, 2) suggests that such label "fits games from Tetris via Drug Wars to EverQuest" while it excludes "computerized toys like Furby and dice and card games like Blackjack". Interestingly enough, the notion encompasses also "non-computerized simulation games like Monopoly or Dungeons and Dragons". Underneath the idea of "games in virtual environments" seems to be the idea of the game 'space' as a container, or an arena, for the activity. Multi-player games, like *World of Warcraft* (2004) or *League of Legends* (2009), allow their players to communicate with each other through their actions in the game, and become present to each other as representations on the screen. In this line of description, the technology is facilitating the game-playing that takes place between the players (compare: Woods 2007). In this light it seems sensible to refer to multi-player computer games, following Aarseth, Smedstad & Sunnanå, as "games in virtual environments".

Ihde (1990, 72-107) distinguishes between technologies that appear in "relations of mediation", *i.e.* they mediate human experience of the world, and technologies which appear in "alterity relations", *i.e.* technologies which are treated as 'pseudo-others', acting as "terminus of experience" (Verbeek 2008, 389). Eyeglasses and thermometers mediate experience, whereas ATM machines and theme park rides appear as the terminus of the experience. Multi-player games allow their users to *perceive* something about the world, *i.e.* the other players and their actions, which would not be perceivable without the game artifact. In this light, it seems to make sense to describe the technological artifact of the multi-player computer game, or the 'virtual environment' it offers, as appearing in a relation of mediation.

The single-player computer game, in contrast, is a pseudo-other, a terminus of experience. We interact *with* single-player computer games, not *through* them. Single-player computer games do not allow us to perceive anything beyond themselves. If we consider single-player computer games like *Railroads!* it seems more sensible to state that they appear in "alterity relations". What we have here are two very different kinds of human-technology relationships, and grouping them together only due to the colloquial reference to both of them as 'computer games' or 'virtual environments' would be to ignore a wealth of detail about their technological specificities, including those related to their use of space. What distinguishes computer games from 'navigable spaces', 'virtual environments', and the like seems to be the subordination of spatial representation, among other representations, to gameplay. This prompts a shift from 'game spaces' to

what we might call 'playable worlds'. I shall focus on this shift in the following.

Let us look at the relationship between spatiality and playability by turning to Wark (2007). Wark (2007, §069), when discussing how spatiality of computer games is experienced, observes that "the algorithm[3] consumes the topographic and turns it into the topological." The transformation of the topographic into topological can be illustrated in reference to the 'art game' *Proteus* (2013) by Ed Key and David Kanaga. Even though the perspective onto space in *Proteus* is rather different from that in *Railroads!,* this example serves to illustrate the aforementioned transformation. *Proteus* allows its user to move around a point of view into the landscape of an island, illustrated in colourful retro-style graphics suggestive of 1980's home computers. On the island, seasons/time of day change, and once they have cycled through, the user's visit to the island is over, and the artifact returns to the main menu mode. The player can encounter chickens, an NPC with a pogo stick, and other such creatures. There seems to be a generative soundtrack, evolving according to what the player does, adding to the attraction of this work as a rather captivating audiovisual spectacle.

Moving the camera around in *Proteus* is rather similar to moving the camera around in first-person shooter games. However, unlike first-person shooters, where details of the environment can most often be manipulated in a variety of ways, there is no interactive functionality beyond 'navigating' the spatial representation in *Proteus* except for some NPCs escaping if confronted by the camera. Surviving the visit to the island of *Proteus* is not hard – there is no risk, the user cannot fail. (Leino 2013) In first-person shooters some locations can be more important, more dangerous, more useful, *etc*, than others, as they become relevant in relation to the player's project of survival. Since surviving or not surviving is not a question in *Proteus*, no such distinctions can be made about its space.

Aarseth (2000, 163) suggests that the constitution of the spatial representation in games is "a reductive operation leading to a representation of space that is not in itself spatial, but symbolic and rule-based", where "the reductions" are used "as a means to achieve the object of gameplay." Were we to bridge this with Wark (2007, §069), we might suggest that the experience of gameplay made possible by a spatial representation involves a reduction of the topographic into topological. We can read an attempt to create a "topographic world" with very particular aesthetic characteristics in *Proteus*, in how the terrain is formed and how the textures look like, but following Wark (2007, §069), we can observe that the environment represented by *Proteus* remains "topographical" as here is no "algorithm" according to which it would get converted into "topological." *Proteus* invites its users to appreciate its topography, or its 'virtual environment' in its inexhaustible aesthetic fullness without the reduction characteristic to gameplay.

Of course, nothing prevents one from using the virtual environment of *Proteus* to play whichever self-invented games and thus maintain the reduction of "topographical" into "topological" mentally. A with a stopwatch can play the game of 100m dash, but the software does not distinguish between the user's actions, and thus does not encourage any particular kind of reduction from topographic into topological over another. A landscape

[3] Supposedly referring to what could perhaps be roughly approximated as 'game mechanics'

feature, say, a tree, remains a representation of a tree, and does not become a node standing in relation to other nodes.

Gallagher and Zahavi (2008, 153) assert that the "spatiality of the lifeworld – of the world we live in – is a spatiality captured not by geometrical measures, but structured by contexts of use." By making us responsible for the freedom we enjoy as players, *i.e.* making us face the risk that we might not survive, single-player computer game artefacts enforce particular modes, if not contexts, of use, these we might approximate as 'gameplay' in the particular game. We may do other things, too, but in order to survive we must fulfil the requirements hardcoded in the game artifact. These requirements provide the 'context of use' structuring the ways in which we deal with the 'space' of *Railroads!*. Some examples follow.

Appropriated onto an experience of playing *Railroads!*, the consummation of the topographical and its transformation into the topological means that in order to succeed as a player, we do not have to grasp the landscape in terms of its topographic features (e.g. "that is a city, there is a mountain"). Instead, a successful player will understand the landscape in terms of a multitude of different potential kinds of relations between the possible nodes it contains. For example: Frankfurt produces coal which should be hauled to Trieste. However, there are numerous potential routings between the locations, each with their own benefits and drawbacks. The player can choose between different kinds of relations between Trieste and Frankfurt, for example how she prefers to deal with the mountain range between the two cities. All potential relations between Frankfurt and Trieste would have somewhat different impacts for the player's possibilities for future choices about relations between these two and other cities.

Before any track between the two cities gets built, the player has to decide whether to build single-track or dual-track. Quite simply, the dual track is twice as expensive as single track, but gives the player much more flexibility for planning trains running not between the two cities but also for using the track capacity for trains on other routes extending beyond Frankfurt and Trieste. Shorter routes are always the more cost-effective, but having to build a tunnel to cut through a mountain can be very costly. The track-laying function in the game follows a somewhat fuzzy logic, as the game decides, perhaps in an attempt to enhance the interface's usability, when to build a viaduct, a bridge, a tunnel, or normal open-air track, supposedly based on the properties of the location and the direction to and from which the track is being built.

However, it is possible to make the track climb up the mountainside and thus save the cost of building a tunnel, but this requires careful planning, involving laying the track in very short chunks instead of just dragging the route from point A to point B and letting the game figure out the details. As trains achieve highest speeds on flat surfaces, forcing them to pull their load to the top of a mountain will most likely slow the trains down significantly. If the mine in Frankfurt could produce more coal than could be hauled to Trieste via the slower route over the mountains in a given period of time, the slower route can mean lower profit margins. Routing the track through a natural pass in the mountains would usually be the best option, but if the AI opponent has already built its tracks in the pass, the pass might not be usable by the player.

If the Frankfurt-Trieste connection was among the first tracks to be built in a particular playing, the player is likely to have neither significant savings for the project, nor much income at the moment. Hence, the player's main concern would most likely to be to get the track built given the limited budget in the first place, instead of for example optimizing the journey time with the recurring yield of the coal mine. Thus, the player might decide to, for example, take the least expensive option: connect Frankfurt and Trieste by going over rather than under the Alps, by slaloming up and down the slopes, trying to find a way over and around the steepest mountaintops. What is crucial here is that the "steepness" with which the player who is trying to save money is concerned, would not refer to the "topographical" quality of being steep, as we know it from our everyday spatial experience (i.e. what steep hills look like like, how it would feel like to stand on the slope, etc), but to the property of particular kind of in-games location, due to which the game will suggest an expensive tunnel instead of more affordable but slower open air track. What happens is that in relation to the project of completing one's first train line to haul coal between Frankfurt and Trieste, the 'steepness', a concept that makes sense for embodied human beings through their biographical histories, is transformed into 'impassability without tunnel', a concept that makes sense to players of *Railroads!*

In the light of above description it seems that we can consider spatial representation, not unlike many other aspects of single-player computer games (in the case of *Railroads!* for example the economics model, the sounds of the locomotives, the pre-defined tasks whose completion is rewarded with a bonus payment, etc), as subordinated to gameplay. The spatial features of *Railroads!* mountains, cities, appear to the player as nodes in the network that she must manage in order to not be thrown out from it. Hence, a description more faithful to the role of space in the experience of computer game play would mention 'playability' (as in 'playable space') instead of 'representation' (as in 'represented space'), 'simulation' (as in 'simulated space'), or 'virtuality' (as in 'virtual space').

'Playable space' seems more accurate a description of the role of space in single-player computer games than for example 'simulated space', which could also describe the 'space' in interactive installations and multimedia applications. However, it seems unclear why spatial metaphors should be dragged along, unless there are special motivations for analyzing computer games in terms of their spatial representations specifically. Elsewhere I have suggested, through an argument which I shall not reproduce here, that the struggle for survival that characterizes the experience of playing single-player computer games, *i.e.* the "gameplay condition" (Leino 2009) resembles the struggle faced by humans when trying to survive in the world, *i.e.* the "human condition" (Sartre 1943, Sartre 2003, 505). Perhaps, following the line of argument put forward by Möring (2013), the spatial metaphors could be replaced with what could be approximated as an existential metaphor, allowing us to talk about 'game worlds' rather than 'game spaces'. In this description, the 'world' would not be a container for an activity or a process and would not be defined by its spatial features, but instead refer to the kind of existential commitment players have with the playable artifact: 'game world' would be that from which the player of a single-player computer game is constantly risking to be thrown out.

Conclusions

In this paper I have examined the feasibility of using spatial terminology to the description of the experience of playing single-player computer games. While I have recognized the feasibility of analyzing computer games using spatial terminology, and the ways in which words describing aspects of space are relevant in many computer games, the analysis has suggested that the notion of 'game space' is problematic for describing the experience of computer game play. This is the case especially if the Merlau-Pontian idea of body as 'the pivot of the world' is considered as basis for spatial experience. Synthesizing Aarseth (2000) and Klevjer (2006), I have argued that if one assumes body as a 'pivot of the world' as the basis of spatial experience, to speak about 'computer game space' requires one to include the conceptual interface of 'hallucinated locomotion and proprioception' in the analysis. This move appears sensible only in reference to a limited set of single-player computer games, namely those 'story-games' which require the player to invest intellectual effort in imagining not only that the plot events are real but also that the body of the avatar is his own.

By making use of Ihde's (1990) distinction between human-technology relations characterized by mediation and alterity, I have highlighted a significant difference between single-player and multi-player games. Single-player games are those which we perceive and with which we interact, while multi-player games are those *through* which we perceive and interact. Hence, we can describe single-player computer games as appearing in alterity relations and multi-player games in relations of mediation. This observation prompted me to question the validity of the idea of game space as a 'container' for the game-playing activity (cf. Aarseth, Smedstad & Sunnanå 2003) for the purpose of describing single-player computer games as played.

Following Aarseth (2000) and Wark (2007), I have suggested that what happens to spatial representations when a single-player computer game is played, is not necessarily any different from what happens to other representations; through a reductive process they become relevant in relation to the player's struggle of surviving the resistance of the game artifact. In this process, the aspects which make space space as we know it from embodied experience often disappear. Hence, following Möring (2013), I have suggested that perhaps spatial metaphors could be replaced with 'existential metaphors', and thus speaking of 'game worlds' instead of 'game spaces' would be a description more faithful to the lived experience of single-player computer game play.

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